

CURRICULUM VITAE

Name: Osvaldo E. Sala
Address: Arizona State University
School of Life Sciences and School of Sustainability, Tempe, AZ 85287, USA
E-mail Osvaldo.Sala@asu.edu Web Address <http://sala.lab.asu.edu/>

ACADEMIC TRAINING

BSc Agriculture, University of Buenos Aires, Argentina
MSc, Ecology, Colorado State University, USA
PhD, Ecology, Colorado State University, USA

AWARDS AND HONORS

2013 **Ecological Society of America**, Fellow
2009 **American Association for the Advancement of Science**, Fellow
2004 **Andrew D. White Professor-at-Large, Cornell University**
2003 **American Academy of Arts and Sciences**, USA, Elected Member
2003 **National Academy of Physical and Natural Sciences**, Buenos Aires, Elected Member
2002 **National Academy of Sciences**, Córdoba, Argentina, Elected Member
1993 **Guggenheim Fellow**
2003 **Bernardo Houssay** award for scientific accomplishments, Argentina
1987 **Bernardo Houssay** award for scientific accomplishments, Argentina

ACADEMIC EXPERIENCE

2010- Julie A. Wrigley Professor of Life Sciences and Sustainability, **Arizona State University**
2005-10 Sloan Lindemann Distinguished Professor of Biology, **Brown University**
2005-08 Director, Environmental Change Initiative, **Brown University**
2005-08 Director, Center for Environmental Studies, **Brown University**
1991-04 Professor, Department of Ecology, School of Agronomy, **University of Buenos Aires**
1982-04 Research Scientist, **National Research Council**, Argentina
1999 Visiting Scholar, **Imperial College** at Silwood Park
1993-94 Visiting Scholar, Department of Biological Sciences, **Stanford University**, USA
1987-88 Chairman, Department of Ecology, School of Agronomy, **University of Buenos Aires**, Argentina
1987-90 Associate Professor, Department of Ecology, School of Agronomy, **University of Buenos Aires**, Argentina
1985-87 Research Scientist, Natural Resource Ecology Laboratory, **Colorado State University**, USA
1982-83 Assistant Professor, Department of Ecology, School of Agronomy, **University of Buenos Aires**, Argentina
1980-82 Assistant Professor, Range Science Department, **Colorado State University**, USA

PROFESSIONAL SERVICE

Current

- Chair, External Advisory Board, School of Global Environmental Sustainability, **Colorado State University**, 2012-15

Previous

- * Co-Director, **SARAS** (South American Institute for Resilience and Sustainability Studies), 2010-16
- * LTER (Long Term Ecological Research) National Advisory Board, **National Science Foundation**, 2010-13
- * **Jury of Ramon Margalef Prize, Barcelona, Spain**, 2008-2011
- * Scientific Advisory Board, **SCOPE Biofuels Project**, 2007-10
- * **Rhode Island, Ocean Special Area Management Plan**, Science Advisory Task Force, 2008
- * Advisor, **National Science Foundation**, Environmental Research and Education, 2007-09
- * Member, Global Agenda Council, **World Economic Forum**, 2008-09
- * President, **SCOPE**, Scientific Committee on Problems of the Environment, 2005-09
- * External Evaluation **CREAF**, Universidad Autónoma de Barcelona, Spain, 2008.
- * Member, Science Council, **The Nature Conservancy**, 2005-07
- * Secretary General, **SCOPE**, Scientific Committee on Problems of the Environment, 2001-05
- * Editorial Board of **Climate Research**, Inter Research, 1992-05
- * Editor of **Global Change Biology**, Blackwell Scientific, 2003-05
- * Editorial Board of **Ecosystems**, Springer Verlag, 1997-2004
- * Editorial Board of **Oecologia**, Springer Verlag, 1994-2004
- * Member at large Governing Board of the **Ecological Society of America**, 2002-04
- * Chair of “**Red Latinoamericana de Botánica**,” 2001-2004
- * Scientific Committee for the **International Geosphere-Biosphere Programme (IGBP)**, 1994-1996
- * Scientific Steering committee of **Global Change and Terrestrial Ecosystems (GCTE)**, a core project of the International Geosphere Biosphere Programme, 1991-1999
- * Leader, Global Change and Terrestrial Ecosystems (**GCTE**). **Focus 4, Global Change and Ecological Complexity**, 1994-1999
- * Steering committee of **America's Interhemisphere Geo-Biosphere Organization (AMIGO)**, 1991-1995
- * Scientific Advisory Committee of the **Biodiversity and Ecosystem Functioning: Soils and Sediment**, a program of the Scientific Committee on Problems of the Environment (**SCOPE**), 1995-1999
- * Scientific Advisory Committee of **Diversitas**, An International Programme of Biodiversity Science, IUBS, SCOPE, UNESCO, ICSU, IGBP-GCTE, and IUMS, 1995- 2001
- * Scientific Steering Committee of **SCOPE**, Scientific Committee on Problems of the Environment, 1998-2001
- * Scientific Steering Committee of “**Red Latinoamericana de Botánica**” 1999-2001
- * Biology Panel, National Research Council of Argentina, 1989-1992
- * Vice-President **Ecological Society of Argentina**, 1991-1993
- * President **Ecological Society of Argentina**, 1997-1999 and 1999-2001
- * Editorial Board of **Vegetatio**, Kluwer academic publishers, 1990-1996
- * Editorial Board of **Global Change Biology**, Blackwell Scientific, 1994-2003

RESEARCH GRANT EXPERIENCE

- 2016-19 Exotic grass and woody-plant encroachment in Southwestern rangelands: Mechanisms of invasion and opportunities of containment **USDA-NIFA-AFRI** (PI) \$500,000
- 2015-18 Water Availability Controls on Above-Belowground Productivity Partitioning: Herbivory versus Plant Response **National Science Foundation**, (PI) \$718,935
- 2014-19 Drought-Net: A global network to assess terrestrial ecosystem sensitivity to drought **National Science Foundation**, (co-PI) \$499,992
- 2012-13 Abrupt grass-woodland transitions: Determinants and consequences for ecosystem services **National Science Foundation**, \$49,798
- 2012-18 LTER: Long-Term Research at the Jornada Basin (LTER VI) **National Science Foundation**, (co-PI) \$5,880,000
- 2012-14 Woody-plant encroachment: Degradation or a shift in the portfolio of ecosystem services? **Keck Foundation**, \$75,000
- 2009-13 Precipitation Controls of Carbon and Nitrogen Cycles in Arid-Semiarid Ecosystems **US National Science Foundation**, \$799,439
- 2009-10 Vegetation structure constraints on ANPP in arid ecosystems: assessing the meristem limitation hypothesis **US National Science Foundation**, \$14,804
- 2004-07 Global change and the carbon cycle in arid and semiarid ecosystems: Experiments in the Patagonian steppe. **University of Buenos Aires**
- 2004-07 Spatial and temporal controls of carbon cycling in arid and semiarid ecosystems **PICT, Agencia Nacional de Promoción Científica y Tecnológica**
- 2002-04 Ecophysiological consequences of infrequent massive flowering of monocarpic bamboo grasses (*Chusquea* spp) in temperate and tropical South America **US National Science Foundation**
- 2001-02 Biodiversity effect on ecosystem functioning: Diversity of species, functional groups, patches, and resources. **University of Buenos Aires**
- 2000-03 Global change effects on primary production in arid ecosystems: The Patagonian steppe as a model ecosystem. **PICT, Agencia Nacional de Promoción Científica y Tecnológica**
- 1999-06 The role of biodiversity and climate in the functioning of ecosystems: A comparative study of grasslands, savannas, and forests. **InterAmerican Institute for Global Change Research**
- 1998-01 Ecosystem responses to stratospheric ozone reduction in southernmost South America. **US National Science Foundation**
- 1998-00 Biodiversity effects on the functioning of ecosystems: Experiments and models at two scales in the Patagonian steppe. **UBA**
- 1998-00 The effect of global change on the functioning of the Patagonian steppe ecosystem. **Agencia Nacional de Promoción Científica y Tecnológica**
- 1998-01 Management technology to increase production and decrease erosion in grasslands and steppes. **Agencia Nacional de Promoción Científica y Tecnológica**
- 1997-01 Production and decomposition controls in the Patagonian steppe. **CONICET**
- 1997 Global Change Effects on Biodiversity and Ecosystem Functioning: Manipulation of a Keystone Process. **InterAmerican Institute for Global Change Research**

- 1996 Workshop “Biodiversity Scenarios” at UC Santa Barbara, California, USA. June 1996. **InterAmerican Institute for Global Change Research** and **National Center for Ecological Analysis and Synthesis UC Santa Barbara**
- 1995 Workshop “Global Change and Ecological Complexity” Cedar Creek, Minnesota, USA, September 1995. **Electric Power Research Institute** and **International Geosphere Biosphere Programme**
- 1995 Workshop “Global Change Impacts on Latin American Terrestrial Ecosystems and Feedbacks to the Globe” Buenos Aires March 1995. **Inter-American Institute for Global Change Research**
- 1995-98 Ecosystem Responses to Stratospheric Ozone Reduction in Southernmost South America, **US National Science Foundation**
- 1994-97 Seasonal dynamics of primary production, **UBA**
- 1994-97 The role of small rainfall events on nitrogen mineralization, **UBA**
- 1994-97 Constraints on Production and Decomposition in Temperate Semiarid Grasslands, **US National Science Foundation**
- 1992-95 Sustainability of natural and cultivated systems Inter American Development Bank-**CONICET**
- 1991-93 Environmental and management effects on plant available water in the Patagonian steppe, **UBA**
- 1991-93 Nutrient partitioning between shrubs and grasses in the Patagonian steppe, **UBA**
- 1991-93 Cyclical dynamics of vegetation patches in the Patagonian steppe, **UBA**
- 1991 Argentina-Chile scientific collaborative award. **Fundación Antorchas**
- 1991 Competition and facilitation between grasses and shrubs **Fundación Antorchas**
- 1989-93 Resource partitioning among grasses and shrubs in semi-arid regions, **CONICET**
- 1989-93 Cyclical succession in the Patagonian steppe. **CONICET**
- 1988-89 Water dynamics in the Patagonian steppe: A simulation modeling approach **UBA**
- 1988-89 Water partitioning among grasses and shrubs in the Patagonian arid steppe, **UBA**
- 1987-88 Grass-shrub interactions in two semi-arid regions, **US National Science Foundation**
- 1985-88 The effect of defoliation on the community dynamics of a grassland of the Flooding Pampas. **CONICET**
- 1985-88 Resource partitioning among life forms of the arid steppes. **CONICET**
- 1983-84 Resource partitioning among life forms in Southern Patagonia. **UBA**
- 1983-84 Convergence in the partitioning of resources among functional types in two semiarid regions, **US National Science Foundation-CONICET**

GRADUATE STUDENTS AND POST DOCTORAL FELLOWS

Graduate Students:

Luis Weber (exp 2021)
 Amy Wiedenfeld (exp 2018)
 Aaron Boydston (exp 2017)
 Owen McKenna, 2016
 Laureano Gherardi, 2014
 Lara Reichmann, 2011
 Pedro Flombaum, 2007

Marselle Alexander, 2007
Victoria Marchesini, 2006
M. Laura Yahdjian, 2004
Verónica Pancotto, 2004
Pablo Roset, 2000
Esteban Jobbágy, 1998
Adriana Beltrán, 1997
José M. Paruelo, 1991
Martín R. Aguiar, 1991
Rodolfo A. Golluscio, 1990

Postdoctoral fellows:

Laureano Gherardi, 2015-
José Anadón, 2012-
Lara Reichmann, 2011-12
Erika Sudderth, 2009
M. Laura Yahdjian, 2005
Amy T. Austin, 1997-99
Elisabeth Huber-Sannwald, 1996-97
Patricia Folgarait, 1995-97
Silvia Cid, 1995-96
Miguel A. Brizuela, 1991-94

TEACHING EXPERIENCE

Classes currently being taught at Arizona State University:

Ecosystem Ecology (BIO 422/598 SOS 598)
Human Impact on Ecosystem Functioning (SOS494/598; BIO494/598)
Graduate Seminar in Sustainability Science (SOS/ BIO 591)
Life Sciences Career Paths (BIO 189)
Sustainability Science: Interactions between Human and Environmental Systems
(SOS 591)

Classes taught in the past:

Human Impact on Ecosystem Functioning (BIOL1490), Brown University
Biodiversity (BIOL2430), Brown University
Topics in Conservation Science (BIOL1940), Brown University
Ecology, UBA
Ecosystem Ecology, UBA Plant Physiology, UBA
Range Ecophysiology (RS 351), Colorado State University
Functional Diversity in Ecosystems, University of Concepción, Chile
Global Change and Biodiversity, UNAM, Mexico

PUBLICATIONS (H-index = 79)

207. Franco, A., M. A. Knox, W. Andriuzzi, C. Tomasel, O. E. Sala, and D. H. Wall. 2017. Nematode exclusion and recolonization in experimental soil microcosms. **Soil Biology and Biochemistry** 108: 78-83. [PDF](#)
206. Knapp, A. K., M. L. Avolio, C. Beier, C. J. Carroll, S. L. Collins, J. S. Dukes, L. H. Fraser, R. J. Griffin-Nolan, D. L. Hoover, and A. Jentsch. 2017. Pushing precipitation to the extremes in distributed experiments: recommendations for simulating wet and dry years. **Global Change Biology**. 23: 1774-1782. [PDF](#)
205. Sala, O. E., L. Yahdjian, K. M. Havstad, and M. R. Aguiar. 2017. Rangeland Ecosystem Services: Nature's Supply and Humans' Demand. Pages 467-489. *in* D. D. Briske, editor. **Rangeland Systems: Process, Management and Challenges**. Springer Verlag, New York. [PDF](#)
204. Sala, O. E., L. Vivanco, and P. Flombaum. 2017. Grassland Communities and Ecosystems. *in* **Reference Module in Life Sciences**, Elsevier, New York. <http://dx.doi.org/10.1016/B978-0-12-809633-8.02201-9>. [PDF](#)
203. Flombaum, P., L. Yahdjian, and O. E. Sala. 2017. Global-change drivers of ecosystem functioning modulated by natural variability and saturating responses. **Global Change Biology** 23: 503-511. [PDF](#)
202. Sala, O. E. 2016. How Scientists Can Help End the Land-Use Conflict. **Bioscience** 66: (11): 915. [PDF](#)
201. McKenna, O. and O. E. Sala. 2016. Biophysical controls over concentration and depth distribution of soil organic carbon and nitrogen in desert playas. **Journal of Geophysical Research. Biogeosciences** 121: 3019-3029. [PDF](#)
200. Estiarte, M., S. Vicca, J. Peñuelas, M. Bahn, C. Beier, B. Emmett, P. Fay, P. Hanson, R. Hasibeder, J. Kigel, G. Kröel-Dulay, K. Larsen, E. Lellei-Kovács, J. Limousin, R. Ogaya, J. Ourcival, S. Reinsch, O. E. Sala, I. Schmidt, M. Sternberg, K. Tielbörger, A. Tietema, and I. Janssens. 2016. Few multi-year precipitation-reduction experiments find a shift in the productivity-precipitation relationship. **Global Change Biology** 22: 2570-2581. [PDF](#)
199. Gherardi, L. and O. E. Sala. 2015. Enhanced interannual precipitation variability increases plant functional diversity that in turn ameliorates negative impact on productivity. **Ecology Letters** 18:1293-1300. [PDF](#)
198. Gherardi, L. and O. E. Sala. 2015. Enhanced precipitation variability decreases grass- and increases shrub-productivity. **Proceedings of National Academy of Sciences** 112: 12735-12740. [PDF](#)
197. Knapp, A. K., D. L. Hoover, K. Wilcox, M. Avolio, S. Koerner, K. La Pierre, M. Loik, Y. Luo, O. E. Sala, and M. D. Smith. 2015. Characterizing differences in precipitation regimes of extreme wet and dry years: Implications for climate change experiments. **Global Change Biology** 21: 2624-2633. [PDF](#)

196. Sala, O. E., L. Gherardi, and D. P. C. Peters. 2015. Enhanced Precipitation Variability Effects on Water Losses and Ecosystem Functioning: Differential Response of Arid and Mesic Regions. **Climatic Change** 131: 213-227. [PDF](#)
195. Scheffer, M., J. Bascompte, T. Bjordam, S. Carpenter, L. B. Clarke, C. Folke, P. Marquet, N.M. Mazzeo, M., O. E. Sala, and F. Westley. 2015. Dual Thinking for Scientists. **Ecology and Society** 20(2): 3. doi.org/10.5751/ES-07434-200203. [PDF](#)
194. Vandegehuchte, M. L., Z. A. Sylvain, L. G. Reichmann, C. Milano de Tomasel, U. N. Nielsen, D. H. Wall, and O. E. Sala. 2015. Responses of a desert nematode community to changes in water availability. **Ecosphere** 6 (3):1-15. [PDF](#)
193. Yahdjian, L., O. E. Sala, and K. M. Havstad. 2015. Rangeland ecosystem services: shifting focus from supply to reconciling supply and demand. **Frontiers in Ecology and the Environment** 13:44-51. [PDF](#)
192. Monger, C., O. E. Sala, M. C. Duniway, H. Goldfus, I. A. Meir, R. M. Poch, H. L. Throop, and E. R. Vivoni. 2015. Legacy effects in linked ecological-soil-geomorphic systems of drylands. **Frontiers in Ecology and the Environment** 13:13-19. [PDF](#)
191. Peters, D. P., K. M. Havstad, S. R. Archer, and O. E. Sala. 2015. Beyond desertification: new paradigms for dryland landscapes. **Frontiers in Ecology and the Environment** 13:4-12. [PDF](#)
190. Sala, O. E. and F. T. Maestre. 2014. Grass-woodland transitions: Determinants and consequences for ecosystem functioning and provisioning of services. **Journal of Ecology** 102: 1357-1362. [PDF](#)
189. Anadón, J. D., O. E. Sala, and F. T. Maestre. 2014. Climate change will increase savannas at the expense of forests and treeless vegetation in tropical and subtropical Americas. **Journal of Ecology** 102: 1363-1373. [PDF](#)
188. Jobbágy, E. and O. E. Sala. 2014. The imprint of crop-choice on global nutrient needs. **Environmental Research Letters** 9. <http://dx.doi.org/10.1088/1748-9326/9/8/084014>. [PDF](#)
187. Anadón, J. D., O. E. Sala, B. L. Turner, and E. M. Bennett. 2014. The effect of woody-plant encroachment on livestock production in North and South America. **Proceedings of National Academy of Sciences** 111: 12948-12953. [PDF](#)
186. Reichmann, L. G. and O. E. Sala. 2014. Differential sensitivities of grassland structural components to changes in precipitation mediate productivity response in a desert ecosystem. **Functional Ecology** 28: 1292-1298. [PDF](#)
185. Sylvain, Z. A., D. H. Wall, K. L. Cherwin, D. P. C. Peter, L. G. Reichmann, and O. E. Sala. 2014. Soil animal responses to moisture availability are largely scale, not ecosystem dependent: Insight from a cross-site study. **Global Change Biology** 20: 2631-2643. [PDF](#)
184. Flombaum, P., O. E. Sala, and E. B. Rastetter. 2014. Interactions among resource partitioning, sampling effect, and facilitation on the biodiversity effect: a modeling approach. **Oecologia** 174: 559-566. [PDF](#)

183. Yahdjian, L., L. Gherardi, and O. E. Sala. 2014. Grasses have larger response than shrubs to increased nitrogen availability: A fertilization experiment in the Patagonian steppe. **Journal of Arid Environments** 102:17-20. [PDF](#)
182. Herrick, J. E., O. E. Sala, and J. W. Karl. 2013. Land degradation and climate change: a sin of omission? **Frontiers in Ecology and the Environment** 11:283-283. [PDF](#)
181. Gherardi, L. A., O. E. Sala, and L. Yahdjian. 2013. Preference for different inorganic-nitrogen forms among plant-functional types and species of the Patagonian steppe. **Oecologia** 173: 1075-1081. [PDF](#)
180. Gherardi, L. and O. E. Sala. 2013. Automated rainfall manipulation system: A reliable and inexpensive tool for ecologists. **Ecosphere** 4: art 18. [PDF](#)
179. Sala, O. E., L. Vivanco, and P. Flombaum. Grassland Ecosystems. 2013. Vol 4 Pages 1-7 in S. A. Levin, editor. **Encyclopedia of Biodiversity (Second Edition)**. Academic Press. [PDF](#)
178. Peters, D. P. C., S. A. Archer, B. T. Bestelmeyer, M. L. Brooks, J. R. Brown, A. C. Comrie, H. R. Gimblett, J. H. Goldstein, K. M. Havstad, L. López-Hoffman, H. C. Monger, G. S. Okin, A. Rango, O. E. Sala, C. E. Tweedie, and E. R. Vivoni. 2013. Desertification of Rangelands. Pages 239-258 in T. R. Seastedt and K. N. Suding, editors. **Ecosystem Functions and Services**. Elsevier. [PDF](#)
177. Reichmann, L. G., O. E. Sala, and D. P. C. Peters. 2013. Water controls on nitrogen transformations and stocks in an arid ecosystem. **Ecosphere** 4(1):11. <http://dx.doi.org/10.1890/ES12-00263.1>. [PDF](#)
176. Reichmann, L. G., O. E. Sala, and D. P. C. Peters. 2013. Precipitation legacies in desert-grassland primary production occur through previous-year tiller density. **Ecology** 94 (2): 435-443. [PDF](#)
175. Sala, O. E., L. Gherardi, L. Reichmann, E. Jobbágy, and D. Peters. 2012. Legacies of precipitation fluctuations on primary production: Theory and data synthesis. **Philosophical Transactions of the Royal Society B** 367: 3135-3144. [PDF](#)
174. Schwartz, M. W., J. J. Hellmann, J. M. McLachlan, S. D.F., J. O. Borevitz, J. Brennan, A. E. Camacho, G. Ceballos, J. R. Clark, H. Doremus, R. Early, J. R. Etterson, D. Fielder, J. L. Gill, P. Gonzalez, N. Green, L. Hannah, D. W. Jamieson, J. D., B. A. Minter, J. Odenbaugh, S. Polasky, D. M. Richardson, T. L. Root, H. D. Safford, O. E. Sala, S. H. Schneider, A. R. Thompson, J. W. Williams, M. Vellend, P. Vitt, and S. Zellmer. 2012. Managed Relocation: integrating the scientific, regulatory and ethical challenges **Bioscience**: 62: 732-743. [PDF](#)
173. Yao, J., O. E. Sala, and D. Peters. 2013. Cross-site studies "by design": Experiments and observations that provide new insights. in D. P. C. Peters, C. Laney, A. Lugo, S. Collins, C. Driscoll, P. Groffman, J. Grove, A. Knapp, T. Kratz, M. Ohman, R. Waide, and J. Yao, editors. **Long-Term Trends in Ecological Systems: A Basis for Understanding Responses to Global Change**. USDA Agricultural Research Service, Washington, DC, USA. [PDF](#)

172. Sala, O. E., R. A. Golluscio, W. K. Lauenroth, and P. A. Roset. 2012. Contrasting Nutrient- Capture Strategies in Shrubs and Grasses of a Patagonian Arid Ecosystem. **Journal of Arid Environments** 82: 130-135. [PDF](#)
171. Peters, D. P. C., J. Yao, O. E. Sala, and J. Anderson. 2012. Directional Climate Change and Potential Reversal of Desertification in Arid and Semiarid Ecosystems. **Global Change Biology** 18:151-163. [PDF](#)
170. Flombaum, P. and O. E. Sala. 2012. Effects of plant species traits on ecosystem processes: Experiments in the Patagonian steppe. **Ecology** 93 (2): 227-234. [PDF](#)
169. Throop, H., L. Reichmann, O. E. Sala, and S. Archer. 2012. Response of dominant grass and shrub species to water manipulation: An ecophysiological basis for shrub invasion in a Chihuahuan Desert Grassland. **Oecologia** 169:373-383. [PDF](#)
168. Montti, L., P. I. Campanello, M. G. Gatti, C. Blundo, A. T. Austin, O. E. Sala, and G. Goldstein. 2011. Understory bamboo flowering provides a very narrow light window of opportunity for canopy-tree recruitment in a neotropical forest of Misiones, Argentina. **Forest Ecology and Management**. 262:1360-1369. [PDF](#)
167. Yahdjian, L., L. Gherardi, and O. E. Sala. 2011. Nitrogen limitation in arid-subhumid ecosystems: A meta-analysis of fertilization studies. **Journal Arid Environments** 75:675-680. [PDF](#)
166. Yahdjian, L. and O. E. Sala. 2011. El Futuro de los Pastizales Sudamericanos. **Interciencia** 36 (2): 153-159. [PDF](#)
165. Flombaum, P. and O. E. Sala. 2011. Efectos de la biodiversidad sobre el funcionamiento de los ecosistemas. Pages 49-62. In J.A. Simonetti and R. Dirzo, editors. **Conservación Biológica: Perspectivas desde América Latina**. Editorial Universitaria, Universidad de Chile, Santiago. [PDF](#)
164. Yahdjian, L. and O. E. Sala. 2010. Size of Precipitation Pulses Controls Nitrogen Transformations and Losses in an Arid Patagonian Steppe. **Ecosystems** 13:575-585. [PDF](#)
163. Richardson, D. M., J. Hellmann, J. McLachlan, D. Sax, M. Schwartz, J. Brennan, P. Gonzalez, T. Root, O. E. Sala, S. Schneider, D. Ashe, A. Camacho, J. Rappaport Clark, R. Early, J. Etterson, D. Fielder, J. Gill, B. Minter, S. Polasky, H. Safford, A. Thompson, and M. Vellend. 2009. Multidimensional evaluation of managed relocation. **Proceedings of the National Academy of Sciences** 106: 9721-9724. [PDF](#)
162. Downs, M., and O. E. Sala. 2009. Grasslands. Pages 614-618 in S. A. Levin, editor. **The Princeton Guide to Ecology**. Princeton University Press, Princeton. [PDF](#)
161. Zaller, J. G., Caldwell MM, Flint SD, Ballaré C, Scopel A, and O. E. Sala. 2009. Solar UV-B and warming affect decomposition and earthworms in a fen ecosystem in Tierra del Fuego, Argentina. **Global Change Biology** 15:2493-2502. [PDF](#)
160. Golluscio, R. A., A. Austin, G. C. García Martínez, M. Gonzalez-Polo, O. E. Sala, and R. B. Jackson. 2009. Sheep grazing decreases organic carbon and nitrogen pools in the Patagonian steppe: combination of direct and indirect effects. **Ecosystems** 12:686-697. [PDF](#)

159. Marchesini, V. A., O. E. Sala, and A. T. Austin. 2009. Ecological consequences of a massive flowering event of bamboo (*Chusquea culeou*) in a temperate forest of Patagonia, Argentina. **Journal of Vegetation Science** 20:424-432. [PDF](#)
158. Sala, O. E., D. Sax, and H. Leslie. 2009. Biodiversity Consequences of Increased Biofuel production. Pages 127-137 in R. W. Howarth and S. Bringezu, editors. **Biofuels: Environmental Consequences and Interactions with Changing Land Use**. Cornell University Press. [PDF](#)
157. Howarth, R. W., S. Bringezu, L. Martinelli, R. Santoro, D. Messem, and O. E. Sala. 2009. Introduction: Biofuels and the Environment in the 21st Century. Pages 15-36 in R. W. Howarth and S. Bringezu, editors. **Biofuels: Environmental Consequences and Interactions with Changing Land Use**. Cornell University Press, Ithaca. [PDF](#)
156. Ojima, D., C. Field, P. Leadley, O. E. Sala, D. Messem, J. Petersen, J. Born, L. VanWey, and M. Wright. 2009. Mitigation Strategies: Biofuel Development Considerations to Minimize Impacts on the Socio-Environmental System. Pages 287-302 in R. W. Howarth and S. Bringezu, editors. **Biofuels: Environmental Consequences and Interactions with Changing Land Use**. Cornell University Press, Ithaca. [PDF](#)
155. Flombaum, P. and O. E. Sala. 2009. Cover is a good predictor of aboveground biomass in arid systems. **Journal of Arid Environments** 73: 597-598. [PDF](#)
154. Sala, O. E., L. A. Meyerson, and C. Parmesan, editors. 2009. **Biodiversity Change and Human Health: From Ecosystem Services to Spread of Disease**. Island Press, Washington, DC. [PDF](#)
153. Sala, O. E., L. A. Meyerson, and C. Parmesan. 2009. Changes in biodiversity and their consequences for human health. Pages 1-12 in O. E. Sala, L. A. Meyerson, and C. Parmesan, editors. **Biodiversity Change and Human Health: From Ecosystem Services to Spread of Disease**. Island Press, Washington DC. [PDF](#)
152. Meyerson, L. A., O. E. Sala, A. Froment, C. Friedman, K. Hund-Rinke, P. Martens, A. Mazumder, A. Purohit, M. Thomas, and A. Wilby. 2009. Sustainable allocation of biodiversity to improve human health and well-being. Pages 83-98 in O. E. Sala, L. A. Meyerson, and C. Parmesan, editors. **Biodiversity Change and Human Health: From Ecosystem Services to Spread of Disease**. Island Press, Washington DC. [PDF](#)
151. Meyerson, F. A. B., L. A. Meyerson, C. Parmesan, and O. E. Sala. 2009. Human health, biodiversity and ecosystem services: the intertwined challenging future. Pages 281-285 in O. E. Sala, L. A. Meyerson, and C. Parmesan, editors. **Biodiversity Change and Human Health: From Ecosystem Services to Spread of Disease**. Island Press, Washington, DC. [PDF](#)
150. Lauenroth, W. K., D. G. Milchunas, O. E. Sala, I. Burke, and J. A. Morgan. 2008. Net Primary Production in the Shortgrass Steppe. Pages 270-305 in W. K. Lauenroth and I. Burke, editors. **Ecology of the Shortgrass Steppe**. Oxford University Press, Oxford. [PDF](#)

149. Melillo, J. M., and O. E. Sala. 2008. Ecosystem Services. Pages 75-115 in E. Chivian and A. Bernstein, editors. **Sustaining Life: How Human Health Depends on Biodiversity**. Oxford University Press, Oxford. [PDF](#)
148. Flombaum, P., and O. E. Sala. 2008. Higher effect of plant species diversity on productivity in natural than artificial ecosystems. **Proceedings of the National Academy of Sciences**.105: 6087-6090. [PDF](#)
147. Yahdjian, L., and O. E. Sala. 2008. Climate Change Impacts on South American Rangelands. **Rangelands**. DOI: 10.2111/1551-501X(2008)30[34:CCIOSA]2.0.CO;2. [PDF](#)
146. Armas, C., F. I. Pugnaire, and O. E. Sala. 2008. Patch structure dynamics and mechanisms of cyclical succession in a Patagonian steppe (Argentina). **Journal of Arid Environments** 72:1552-1561. [PDF](#)
145. Cipriotti, P. A., P. Flombaum, O. E. Sala, and M. Aguiar. 2008. Does drought control emergence and survival of grass seedlings in semi-arid rangelands? An example with a Patagonian species. **Journal Arid Environments** 72:162-174. [PDF](#)
144. Cid, M. S., C. M. Ferri, M. A. Brizuela, and O. E. Sala. 2008. Structural heterogeneity and productivity of a tall fescue pasture grazed rotationally by cattle at four stocking densities. **Grassland Science** 54: 9-16. [PDF](#)
143. Yahdjian, L., and O. E. Sala. 2008. Do litter decomposition and nitrogen mineralization show the same trend in the response to dry and wet years in the Patagonian steppe? **Journal Arid Environments** 72: 687-695. [PDF](#)
142. Flombaum, P., and O. E. Sala. 2007. A non-destructive and rapid method to estimate biomass and aboveground net primary production in arid environments. **Journal Arid Environments** 69:352-358. [PDF](#)
141. Knapp, A. K., J. M. Briggs, D. L. Childers, and O. E. Sala. 2007. Estimating Aboveground Net Primary Production in Grassland and Herbaceous Dominated Ecosystems. Pages 27-48 in T. J. Fahey and A. K. Knapp, editors. **Principles and Standards for Measuring Primary Production**. Oxford University Press, Oxford. [PDF](#)
140. Peters, D., O. Sala, C. Allen, A. Covich, and M. Brunson. 2007. Cascading events in linked ecological and socio-economic systems: Predicting change in an uncertain world. **Frontiers in Ecology and the Environment**: 5 (4): 221-224. [PDF](#)
139. Yahdjian, L. and O.E. Sala. 2006. Vegetation structure constrains primary production response to increased water availability in the Patagonian steppe of Argentina. **Ecology** 87:952-962. [PDF](#)
138. Chapin, F. S., G. M. Woodwell, J. T. Randerson, E. B. Rastetter, G. M. Lovett, D. D. Baldocchi, D. A. Clark, M. E. Harmon, D. S. Schimel, R. Valentini, C. Wirth, J. D. Aber, J.J. Cole, M. L. Goulden, J. W. Harden, M. Heimann, R. W. Howarth, P. A. Matson, A. D. McGuire, J. M. Melillo, H. A. Mooney, J. C. Neff, R. A. Houghton, M. L. Pace, M. G. Ryan, S. W. Running, O. E. Sala, W. H. Schlesinger, and E.-D. Schulze. 2006. Reconciling Carbon- cycle Concepts, Terminology, and Methods. **Ecosystems** 9:1041-1050. [PDF](#)

137. Sala, O.E. and R. B. Jackson. 2006. Determinants of biodiversity change: Ecological tools for building scenarios. **Ecology**: 87: 1875-1876. [PDF](#)
136. Dobson, A., D. Lodge, J. Alder, G. S. Cumming, J. Keymer, J. McGlade, H. Mooney, J.A. Rusak, O. E. Sala, V. Wolters, D. H. Wall, R. Winfree, and M. Xenopoulos. 2006. Habitat loss, trophic collapse and the decline of ecosystem services. **Ecology**: 87: 1915-1924. [PDF](#)
135. Austin, A. T., O.E. Sala, and R. B. Jackson. 2006. Inhibition of nitrification alters carbon turnover in the Patagonian steppe. **Ecosystems** 9: 1257-1265. [PDF](#)
134. Crisci, J., O.E. Sala, L. Katinas, P. Posadas. 2006. Bridging historical and ecological approaches in biogeography. **Australian Systematic Botany** 19:1-10. [PDF](#)
133. Van Vuuren, D.P., O.E. Sala and H.M. Pereira. 2006. The future of vascular plant diversity under four global scenarios. **Ecology and Society** 11 (2): 25. [online] URL:<http://www.ecologyandsociety.org/vol11/iss2/art25/>. [PDF](#)
132. Yahdjian, L., O. E. Sala, and A. T. Austin. 2006. Differential controls of water input on litter decomposition and nitrogen dynamics in the Patagonian Steppe. **Ecosystems** 9:128-141. [PDF](#)
131. Sala, O. E., D. van Vuuren, H. Pereira, D. Lodge, J. Alder, G. S. Cumming, A. Dobson, V. Wolters, and M. Xenopoulos. 2005. Biodiversity across Scenarios. Pages 375-408 in S. R. Carpenter, P. L. Pingali, E. M. Bennett, and M. Zurek, editors. **Ecosystems and Human Well-Being: Scenarios**. Island Press, Washington DC. [PDF](#)
130. Kareiva, P., J. B. R. Agard, J. Alder, E. M. Bennett, C. Butler, S. R. Carpenter, W. Cheung, G. S. Cumming, R. Defries, B. de Vries, R. E. Dickinson, A. Dobson, J. Foley, J. Geoghegan, B. Holland, P. Kabat, J. Keymer, A. Kleidon, D. Lodge, S. Manson, J. McGlade, H. Mooney, A. Parma, M. Pascual, H. Pereira, M. Rosegrant, C. Ringler, O. E. Sala, B. L. Turner, D. van Vuuren, D. H. Wall, P. Wilkinson, and V. Wolters. 2005. State of the Art in Simulating Future Changes in Ecosystem Services. Pages 71-115 in S. R. Carpenter, P. Pingali, E. M. Bennett, and M. Zurek, editors. **Ecosystems and Human Well-Being: Scenarios**. Island Press, Washington DC. [PDF](#)
129. Alcamo, J., D. Van Vuuren, and C. Ringler. 2005. Methodology for Developing the MA Scenarios. Pages 145-172 in S. R. Carpenter, P. Pingali, E. M. Bennett, and M. Zurek, editors. **Ecosystems and Human Well-Being: Scenarios**. Island Press, Washington, DC. [PDF](#)
128. Adler, P. B., D. G. Milchunas, O. E. Sala, I. C. Burke, and W. K. Lauenroth. 2005. Plant traits and ecosystem grazing effects: Comparison of U.S. sagebrush steppe and Patagonian steppe. **Ecological Applications** 15:774-792. [PDF](#)
127. Pancotto, V. A., O. E. Sala, T. M. Robson, M. M. Caldwell, and A. L. Scopel. 2005. Direct and indirect effects of solar ultraviolet-B radiation on long-term decomposition. **Global Change Biology** 11: 1982-1989. [PDF](#)
126. Cumming, G. S., J. Alcamo, O. E. Sala, R. Swart, E. M. Bennett, and M. Zurek. 2005. Are existing global scenarios consistent with ecological feedbacks? **Ecosystems** 8:143-152. [PDF](#)

125. Meyerson, L. A., J. Baron, J. M. Melillo, R. J. Naiman, R. I. O'Malley, G. Orians, M. A. Palmer, A. S. P. Pfaff, S. W. Running, and O. E. Sala. 2005. Aggregate measures of ecosystem services: can we take the pulse of nature? **Frontiers in Ecology and the Environment** 3:56-59. [PDF](#)
124. Huxman, T. E., M. D. Smith, P. A. Fay, A. K. Knapp, M. R. Shaw, M. E. Loik, S. D. Smith, D. T. Tissue, J. C. Zak, J. F. Weltzin, W. T. Pockman, O. E. Sala, B. Haddad, J. Harte, G. W. Koch, S. Schwinning, E. E. Small, and D. G. Williams. 2004. Convergence across biomes to a common rain-use efficiency. **Nature** 429:651-654. [PDF](#)
123. Lauenroth, W. K., H. E. Epstein, J. M. Paruelo, I. C. Burke, M. R. Aguiar, and O. E. Sala. 2004. Potential effects of climate change on the temperate zones of North and South America. **Revista Chilena de Historia Natural** 77:439-453. [PDF](#)
122. Schwinning, S., and O. E. Sala. 2004. Hierarchy of responses to resource pulses in arid and semi-arid ecosystems. **Oecologia** 141: 211-220. [PDF](#)
121. Schwinning, S., O. E. Sala, M. Loik, and J. Ehleringer. 2004. Thresholds, memory, and seasonality: understanding pulse dynamics in arid/semiarid ecosystems. **Oecologia** 141: 191-193. [PDF](#)
120. Robson, T. M., V. A. Pancotto, C. L. Ballaré, O. E. Sala, A. L. Scopel, and M. M. Caldwell. 2004. Reduction of solar UV-B mediates changes in the *Sphagnum capitulum* microenvironment and the peatland microfungus community. **Oecologia** 140:480-490. [PDF](#)
119. Adler, P. B., D. G. Milchunas, W. K. Lauenroth, O. E. Sala, and I. C. Burke. 2004. Functional traits of graminoids in semi-arid steppes: a test of grazing histories. **Journal of Applied Ecology** 41:653-663. [PDF](#)
118. Zaller, J. G., P. S. Searles, M. M. Caldwell, S. D. Flint, A. L. Scopel, and O. E. Sala. 2004. Growth responses to ultraviolet-B radiation of two *Carex* species dominating an Argentinean fen ecosystem. **Basic and Applied Ecology** 5: 153-162. [PDF](#)
117. Giordano, C. V., T. Mori, O. E. Sala, A. L. Scopel, M. M. Caldwell, and C. L. Ballaré. 2003. Functional acclimation to solar UV-B radiation in *Gunnera magellanica*, a native plant species of southernmost Patagonia. **Plant Cell and Environment** 26: 2027-2036. [PDF](#)
116. López, N. I., A. T. Austin, O. E. Sala, and B. S. Méndez. 2003. Controls on nitrification in a water-limited ecosystem: experimental inhibition of ammonia-oxidising bacteria in the Patagonian steppe. **Soil Biology & Biochemistry** 35: 1609-1613. [PDF](#)
115. Zaller, J. G., P. S. Searles, M. C. Rousseaux, S. D. Flint, M. M. Caldwell, O. E. Sala, C. L. Ballaré, and A. L. Scopel. 2003. Solar ultraviolet-B radiation can affect slug-feeding preference for some plant species native to a fen ecosystem in Tierra del Fuego, Argentina. **Plant Ecology**. 169: 43-51. [PDF](#)
114. Ollinger, S., O. E. Sala, G. Agren, B. Berg, E. Davidson, C. B. Field, M. Lerdau, J. Neff, M. Scholes, and R. Sterner. 2003. New frontiers in the study of element interactions. Pages 63-91 In J. M. Melillo, C. B. Field, and B. Moldan, editors. **Interactions of the major biogeochemical cycles: Global change and human impacts**. Island Press, Washington, DC. [PDF](#)

113. Robson, T. M., V. A. Pancotto, S. D. Flint, C. L. Ballaré, O. E. Sala, A. L. Scopel, and M. M. Caldwell. 2003. Six years of solar UV-B manipulations affect growth of Sphagnum and vascular plants in a Tierra del Fuego peatland. **New Phytologist** 160: 379-389. [PDF](#)
112. Pancotto, V. A., O. E. Sala, M. Cabello, N. I. López, T. M. Robson, C. L. Ballaré, M. M. Caldwell, and A. L. Scopel. 2003. Solar UV-B decreases decomposition in herbaceous plant litter in Tierra del Fuego, Argentina: Potential role of an altered decomposer community. **Global Change Biology** 9:1465-1474. [PDF](#)
111. Sala, O.E. 2003. Almost all about biodiversity. **Science** 299: 1521. [PDF](#)
110. Veron, S. R., J. M. Paruelo, O.E. Sala, and W.K. Lauenroth. 2002. Environmental controls of primary production in agricultural systems of the Argentine Pampas. **Ecosystems**. 5: 625-635. [PDF](#)
109. Yahdjian, L., and O. E. Sala. 2002. A rainout shelter design for intercepting different amounts of rainfall. **Oecologia** 133:95-101. [PDF](#)
108. Loreau, M., A. Downing, M. Emmerson, A. Gonzalez, J. Hughes, P. Inchausti, J. Joshi, J. Norberg, and O. E. Sala. 2002. A new look at the relationship between diversity and stability. Pages 79-91. In M. Loreau, S. Naeem, and P. Inchausti, editors. **Biodiversity and ecosystem functioning: synthesis and perspectives**. Oxford University Press, Oxford. [PDF](#)
107. Zaller, J. G., M. M. Caldwell, S. D. Flint, A. L. Scopel, O. E. Sala, and C. L. Ballaré. 2002. Solar UV-B radiation affects below-ground parameters in a fen ecosystem in Tierra del Fuego, Argentina: implications of stratospheric ozone depletion. **Global Change Biology**. 8: 867-871. [PDF](#)
106. Folgarait, P. J., and O. E. Sala. 2002. Granivory rates by rodents, insects, and birds at different microsites in the Patagonian steppe. **Ecography**. 25: 417-427. [PDF](#)
105. Austin, A. T., and O. E. Sala. 2002. Carbon and nitrogen dynamics across a natural precipitation gradient in Patagonia, Argentina. **Journal of Vegetation Science**. 13: 351-360. [PDF](#)
104. Jobbágy, E., O. E. Sala, and J. M. Paruelo. 2002. Patterns and controls of primary production in the Patagonian steppe: a remote sensing approach. **Ecology**. 83:307-319. [PDF](#)
103. Loreti, J., M. Oesterheld, and O. E. Sala. 2001. Lack of intraspecific variation in resistance to defoliation in a grass that evolved under light grazing pressure. **Plant Ecology** 157:195-202. [PDF](#)
102. Paruelo, J. M., E. G. Jobbágy, and O. E. Sala. 2001. Current distribution of ecosystem functional types in temperate South America. **Ecosystems** 4:683-698. [PDF](#)
101. Ballaré, C. L., M. C. Rousseaux, P. S. Searles, J. G. Zaller, C. V. Giordano, T. M. Robson, M. M. Caldwell, O. E. Sala, and A. L. Scopel. 2001. Impacts of solar ultraviolet-B radiation on terrestrial ecosystems of Tierra del Fuego (southern Argentina). **Journal of Photochemistry and Photobiology** 62:67-77. [PDF](#)
100. Sala, O. E., F. S. Chapin, and E. Huber-Sannwald. 2001. Potential biodiversity change: global patterns and biome comparisons. Pages 351-367 in F. S. Chapin, O. E. Sala, and E.

- Huber-Sannwald, editors. **Global Biodiversity in a Changing Environment: Scenarios for the 21st Century**. Springer Verlag, New York. [PDF](#)
99. Sala, O. E. 2001. Temperate Grasslands. Pages 121-137 in F. S. Chapin, O. E. Sala, and E. Huber-Sannwald, editors. **Global Biodiversity in a Changing Environment: Scenarios for the 21st Century**. Springer Verlag, New York. [PDF](#)
 98. Chapin III, F. S., O. E. Sala, and E. Huber-Sannwald. 2001. The future of biodiversity in a changing world. Pages 1-4 in F. S. Chapin, O. E. Sala, and E. Huber Sannwald, editors. **Global Biodiversity in a Changing Environment: Scenarios for the 21st Century**. Springer Verlag, New York. [PDF](#)
 97. Chapin III, F. S., O. E. Sala, and E. Huber-Sannwald, editors. 2001. **Global Biodiversity in a Changing Environment: Scenarios for the 21st Century**. Springer-Verlag, New York. [PDF](#)
 96. Clark, J. S., S. R. Carpenter, M. Barber, S. Collins, A. Dobson, J. Foley, D. Lodge, M. Pascual, R. Pielke, W. Pizer, C. Pringle, W. V. Reid, K. A. Rose, O. E. Sala, W. Schlesinger, D. H. Wall, and D. Wear. 2001. Ecological Forecasts: an Emerging Imperative. **Science** 293:657-660. [PDF](#)
 95. Sala, O. E. 2001. Productivity of temperate grasslands. Pages 285-300 in J. Roy, B. Saugier, and H. A. Mooney, editors. **Terrestrial Global Productivity**. Academic Press, San Diego. [PDF](#)
 94. Rousseaux, M. C., A. L. Scopel, P. S. Searles, M. M. Caldwell, O. E. Sala, and C. L. Ballaré. 2001. Responses to solar ultraviolet-B radiation in a shrub-dominated natural ecosystem of Tierra del Fuego (southern Argentina). **Global Change Biology** 7:467-478. [PDF](#)
 93. Sala, O. E. 2001. Price put on biodiversity. **Nature** 412:34-36. [PDF](#)
 92. Oesterheld, M., J. Loreti, M. Semmartin, and O. E. Sala. 2001. Inter-annual variation in primary production of a semi-arid grassland related to previous-year production. **Journal of Vegetation Science** 12:137-142. [PDF](#)
 91. Sala, O. E., A. T. Austin, and L. Vivanco. 2001. Temperate grassland and shrubland ecosystems. Pages 627-635 in S. Levin, editor. **Encyclopedia of Biodiversity**. Academic Press, San Diego. [PDF](#)
 90. Paruelo, J. M., O. E. Sala, and A. B. Beltrán. 2000. Long term dynamics of water and carbon in semi-arid ecosystems: A gradient analysis in the Patagonian Steppe. **Plant Ecology** 150:133-143. [PDF](#)
 89. Wolters, V., W. L. Silver, D. E. Bignell, D. C. Coleman, P. Lavelle, W. van der Putten, P. de Ruiter, J. Rusek, D. H. Wall, D. A. Wardle, L. Brussaard, J. M. Dangerfield, V. K. Brown, K. Giller, D. U. Hooper, O. E. Sala, J. Tiedje, and J. A. van Veen. 2000. Effects of global changes on above and belowground biodiversity in terrestrial ecosystems: implications for ecosystem functioning. **BioScience** 50:1089-1098. [PDF](#)
 88. Sala, O. E., and A. T. Austin. 2000. Methods of estimating aboveground net primary production. Pages 31-43 in O. E. Sala, R. B. Jackson, H. A. Mooney, and R. W. Howarth, editors. **Methods in Ecosystem Science**. Springer Verlag, New York. [PDF](#)

87. Sala, O. E., R. B. Jackson, H. A. Mooney, and R. W. Howarth. 2000. Methods in ecosystem science: progress, tradeoffs, and limitations. Pages 1-3 in O. E. Sala, R. B. Jackson, H. A. Mooney, and R. W. Howarth, editors. **Methods in Ecosystem Science**. Springer Verlag, New York. [PDF](#)
86. Sala, O. E., R. B. Jackson, H. A. Mooney, and R. W. Howarth, editors. 2000. **Methods in Ecosystem Science**. Springer Verlag, New York. [PDF](#)
85. Chapin, F. S., E. S. Zavaleta, V. T. Eviner, R. L. Naylor, P. M. Vitousek, H. L. Reynolds, D.U. Hooper, S. Lavorel, O. E. Sala, S. E. Hobbie, M. C. Mack, and S. Diaz. 2000. Consequences of changing biodiversity. **Nature** 405:234-242. [PDF](#)
84. Jobbágy, E., and O. E. Sala. 2000. Controls of grass and shrub aboveground production in the Patagonian steppe. **Ecological Applications** 10:541-549. [PDF](#)
83. Jackson, R. B., H. J. Schenk, E. G. Jobbágy, J. Canadell, G. D. Colello, R. E. Dickinson, C. B. Field, P. Friedlingstein, M. Heimann, K. Hibbard, D. W. Kicklighter, A. Kleidon, R. P. Neilson, W. J. Parton, O. E. Sala, and M. T. Sykes. 2000. Belowground consequences of vegetation change and their treatment in models. **Ecological Applications** 10:470-483. [PDF](#)
82. Sala, O. E., F. S. Chapin, J. J. Armesto, E. Berlow, J. Bloomfield, R. Dirzo, E. Huber-Sanwald, L. F. Huenneke, R. B. Jackson, A. Kinzig, R. Leemans, D. M. Lodge, H. A. Mooney, M. Oesterheld, N. L. Poff, M. T. Sykes, B. H. Walker, M. Walker, and D. H. Wall. 2000. Global biodiversity scenarios for the year 2100. **Science** 287:1770-1774. [PDF](#)
81. Aguiar, M., and O. E. Sala. 1999. Patch structure, dynamics, and implications for the functioning of arid ecosystems. **Trends in Ecology and Evolution** 14:273-277. [PDF](#)
80. Austin, A. T., and O. E. Sala., 1999. Foliar $\delta^{15}\text{N}$ is negatively correlated with rainfall along the IGBP transect in Australia. **Australian Journal of Plant Physiology** 26:293-295. [PDF](#)
79. Paruelo, J., W. K. Lauenroth, I. Burke, and O. E. Sala. 1999. Grassland precipitation-use efficiency varies across a resource gradient. **Ecosystems** 2:64-68. [PDF](#)
78. Sala, O. E., F. S. Chapin III, R. H. Gardner, W. K. Lauenroth, H. A. Mooney, and P. S. Ramakrishnan. 1999. Global change, biodiversity and ecological complexity. Pages 304-328 in B. H. Walker, W. L. Steffen, J. Canadell, and J. S. I. Ingram, editors. **The Terrestrial Biosphere and Global Change: Implications for Natural and Managed Ecosystems**. Cambridge University Press, Cambridge. [PDF](#)
77. Paruelo, J., E. Jobbágy, and O. E. Sala. 1998. Biozones of Patagonia (Argentina). **Ecología Austral** 8:145-153. [PDF](#)
76. Paruelo, J., A. Beltrán, E. Jobbágy, O. E. Sala, and R. Golluscio. 1998. The climate of Patagonia: general patterns and controls on biotic processes. **Ecología Austral** 8:85-101. [PDF](#)
75. Aguiar, M., and O. E. Sala. 1998. Interactions among grasses, shrubs, and herbivores in Patagonian grass-shrub steppes. **Ecología Austral** 8:201-210. [PDF](#)

74. Schulze, E., M. Caldwell, J. Canadell, H. A. Mooney, R. B. Jackson, D. Parson, R. Scholes, O. E. Sala, and P. Trimborn. 1998. Downward flux of water through roots (i.e. inverse hydraulic lift) in dry Kalahari sands. **Oecologia** 115:460-462. [PDF](#)
73. Golluscio, R., O. E. Sala, and W. K. Lauenroth. 1998. Differential use of large summer rainfall events by shrubs and grasses: a manipulative experiment in the Patagonian steppe. **Oecologia** 115:17-25. [PDF](#)
72. Paruelo, J., E. Jobbágy, O. E. Sala, W. K. Lauenroth, and I. Burke. 1998. Functional and structural convergence of temperate grassland and shrubland ecosystems. **Ecological Applications** 8:194-206. [PDF](#)
71. Jackson, R. B., O. E. Sala, J. M. Paruelo, and H. A. Mooney. 1998. Ecosystem water fluxes for two grasslands in elevated CO₂: a modeling analysis. **Oecologia** 113:537-546. [PDF](#)
70. Chapin, F. S. I., O. E. Sala, I. C. Burke, J. P. Grime, D. U. Hooper, W. K. Lauenroth, A. Lombard, H. A. Mooney, A. R. Mosier, S. Naeem, S. W. Pacala, J. Roy, W. Steffen, and D. Tilman. 1998. Ecosystem consequences of changing biodiversity. **BioScience** 48: 45-52. [PDF](#)
69. Chapin, F. S., B. H. Walker, R. J. Hobbs, D. U. Hooper, J. H. Lawton, O. E. Sala, and D. Tilman. 1997. Biotic controls over the functioning of ecosystems. **Science** 277: 500-504. [PDF](#)
68. Sala, O. E., W. K. Lauenroth, and R. A. Golluscio. 1997. Plant functional types in temperate semi-arid regions. Pages 217-233 in T. M. Smith, H. H. Shugart, and F. I. Woodward, editors. **Plant Functional Types**. Cambridge University Press, Cambridge. [PDF](#)
67. Aguiar, M. R., and O. E. Sala. 1997. Seed distribution constrains the dynamics of the Patagonian steppe. **Ecology** 78:93-100. [PDF](#)
66. Sala, O. E., and J. M. Paruelo. 1997. Ecosystem services in grasslands. Pages 237-252 in G.C. Daily, editor. **Nature's Services: Societal Dependence on Natural Ecosystems**. Island Press, Washington, D.C. [PDF](#)
65. Schulze, E. D., H. A. Mooney, O. E. Sala, E. Jobbágy, N. Buchmann, G. Bauer, J. Canadell, R. B. Jackson, J. Loreti, M. Oesterheld, and J. R. Ehleringer. 1996. Rooting depth, water availability, and vegetation cover along an aridity gradient in Patagonia. **Oecologia** 108: 503-511. [PDF](#)
64. Canadell, J., R. B. Jackson, J. R. Ehleringer, H. A. Mooney, O. E. Sala, and E. D. Schulze. 1996. Maximum rooting depth of vegetation types at the global scale. **Oecologia** 108: 583-606. [PDF](#)
63. Jackson, R. B., J. Canadell, J. R. Ehleringer, H. A. Mooney, O. E. Sala, and E. D. Schulze. 1996. A global analysis of root distributions for terrestrial biomes. **Oecologia** 108:389-411. [PDF](#)
62. Sala, O. E. 1996. Global change and ecological complexity. Pages 341-345 in B. Walker, and W. Steffen, editors. **Global Change and Terrestrial Ecosystems**. Cambridge University Press, Cambridge. [PDF](#)

61. Sala, O. E., W. K. Lauenroth, and I. C. Burke. 1996. Carbon budgets of temperate grasslands and the effects of global change. Pages 101-119 in A. Breymeyer, D. O. Hall, J. M. Melillo, and G. I. Agren, editors. **Global Change: Effects on Coniferous Forests and Grasslands**. John Wiley and Sons, Chichester, New York. [PDF](#)
60. Sala, O. E., W. K. Lauenroth, S. J. McNaughton, G. Rusch, and X. Zhang. 1996. Biodiversity and ecosystem functioning in grasslands. Pages 129-149 in H. A. Mooney, J. H. Cushman, E. Medina, O. E. Sala, and E. D. Schulze, editors. **Functional Role of Biodiversity: A Global Perspective**. J. Wiley and Sons, Chichester. [PDF](#)
59. Mooney, H. A., J. H. Cushman, E. Medina, O. E. Sala, and E. D. Schulze. 1996. Conclusions. Pages 475-484 in H. A. Mooney, J. H. Cushman, E. Medina, O. E. Sala, and E. D. Schulze, editors. **Functional Roles of Biodiversity: A Global Perspective**. J. Wiley and Sons, Chichester. [PDF](#)
58. Mooney, H. A., J. H. Cushman, E. Medina, O. E. Sala, and E. D. Schulze. 1996. Introduction. Pages 1-6 in H. A. Mooney, J. H. Cushman, E. Medina, O. E. Sala, and E. D. Schulze, editors. **Functional Roles of Biodiversity: A Global Perspective**. J. Wiley and Sons, Chichester. [PDF](#)
57. Mooney, H. A., J. H. Cushman, E. Medina, O. E. Sala, and E. D. Schulze, Editors. 1996. **Functional Roles of Biodiversity: A Global Perspective**. John Wiley & Sons, Chichester. [PDF](#)
56. Sala, O. E., and M. R. Aguiar. 1996. Origin, maintenance, and ecosystem effect of vegetation patches in arid lands. Pages 29-32 in N. West, editor. **Rangelands in a Sustainable Biosphere**. Society for Range Management, Denver. [PDF](#)
55. Aguiar, M. R., J. M. Paruelo, O. E. Sala, and W. K. Lauenroth. 1996. Ecosystem responses to changes in plant functional type composition: an example from the Patagonian steppe. **Journal of Vegetation Science** 7:381-390. [PDF](#)
54. Melillo, J. M., I. C. Prentice, G. D. Farquhar, E. D. Schulze, and O. E. Sala. 1996. Terrestrial biotic responses to environmental change and feedbacks to climate. Pages 444-481 in J. T. Houghton, L. G. Meira Filho, B. A. Callander, N. Harris, A. Kattenberg, and K. Maskells, editors. **Climate Change 1995: The Science of Climate Change**. Cambridge University Press, Cambridge. [PDF](#)
53. Parton, W., J. Scurlock, D. Ojima, D. Schimel, D. Hall, M. Coughenour, E. Garcia Moya, T. Gilmanov, A. Kamnalrut, J. Kinyamario, T. Kirchner, T. Kittel, J. Menaut, O. E. Sala, R. Scholes, and J. van Veen. 1995. **Impact of climate change on grassland production and soil carbon worldwide**. *Global Change Biology* 1:13-22. [PDF](#)
52. Paruelo, J. M., W. K. Lauenroth, H. E. Epstein, I. C. Burke, M. R. Aguiar, and O. E. Sala. 1995. Regional climatic similarities in the temperate zones of North and South America. **Journal of Biogeography** 22:2689-2699. [PDF](#)
51. Jackson, R. B., Y. Luo, Z. G. Cardon, O. E. Sala, C. B. Field, and H. A. Mooney. 1995. Photosynthesis, growth and density for the dominant species in a CO₂-enriched grassland. **Journal of Biogeography** 22:221-225. [PDF](#)

50. Sala, O. E., W. K. Lauenroth, S. J. McNaughton, G. Rusch, and X. Zhang. 1995. Temperate grasslands. Pages 361-366 in H. A. Mooney, J. Lubchenco, R. Dirzo and O. E. Sala, editors. **Global Biodiversity Assessment**, Cambridge University Press, Cambridge. [PDF](#)
49. Sala, O. E. 1995. Human-induced perturbations, biodiversity and ecosystem functioning. Pages 318-323 in H. A. Mooney, J. Lubchenco, R. Dirzo and O. E. Sala, editors. **Global Biodiversity Assessment**, Cambridge University Press, Cambridge. [PDF](#)
48. Cushman, J., R. Dirzo, A. Janetos, J. Lubchenco, H. A. Mooney, and O. E. Sala. 1995. Conclusions. Pages 446-452 in H. Mooney, J. Lubchenco, R. Dirzo, and O. E. Sala, editors. Biodiversity and Ecosystem Functioning: Ecosystem analyses. **Global Biodiversity Assessment**, Cambridge University Press, Cambridge. [PDF](#)
47. Cushman, J., R. Dirzo, A. Janetos, J. Lubchenco, H. A. Mooney, and O. E. Sala. 1995. Introduction. Page 335 in H. A. Mooney, J. Lubchenco, R. Dirzo, and O. E. Sala, editors. Biodiversity and Ecosystem Functioning: Ecosystem Analyses. **Global Biodiversity Assessment**, Cambridge University Press, Cambridge. [PDF](#)
46. Cushman, J., R. Dirzo, A. Janetos, J. Lubchenco, H. A. Mooney, and O. E. Sala. 1995. Conclusions. Pages 323-325 in H. A. Mooney, J. Lubchenco, R. Dirzo, and O. E. Sala, editors. Biodiversity and Ecosystem Functioning: Basic Principles. **Global Biodiversity Assessment**, Cambridge University Press, Cambridge. [PDF](#)
45. Cushman, J., R. Dirzo, A. Janetos, J. Lubchenco, H. A. Mooney, and O. E. Sala. 1995. Introduction. Pages 281-282 in H. A. Mooney, J. Lubchenco, R. Dirzo, and O. E. Sala, editors. Biodiversity and Ecosystem Functioning: Basic Principles. **Global Biodiversity Assessment**, Cambridge University Press, Cambridge. [PDF](#)
44. Mooney, H. A., J. Lubchenco, R. Dirzo, and O. E. Sala. 1995. Biodiversity and ecosystem functioning: ecosystem analyses, section 6. **Global Biodiversity Assessment**, Cambridge University Press, Cambridge. PDF part [1](#), [2](#), [3](#).
43. Mooney, H. A., J. Lubchenco, R. Dirzo, and O. E. Sala. 1995. Biodiversity and ecosystem functioning: basic principles, section 5. **Global Biodiversity Assessment**, Cambridge University Press, Cambridge. [PDF](#)
42. Oesterheld, M., and O. E. Sala. 1995. Modelos ecológicos tradicionales y actuales para interpretar la dinámica de la vegetación: el caso del pastizal de la Pampa Deprimida. **Revista Argentina de Producción Animal** 14:9-14. [PDF](#)
41. Paruelo, J. M., and O. E. Sala. 1995. Water losses in the Patagonian steppe: a modelling approach. **Ecology** 76: 510-520. [PDF](#)
40. Golluscio, R. A., P. A. Roset, O. E. Sala, and J. M. Paruelo. 1994. Modelos en ecología. **Ecología Austral** 4:123-132. [PDF](#)
39. Lauenroth, W. K., O. E. Sala, D. P. Coffin, and T. B. Kirchner. 1994. Recruitment of *Bouteloua gracilis* in the shortgrass steppe: a simulation analysis of the role of soil water. **Ecological Applications** 4: 741-749. [PDF](#)

38. Jackson, R. B., O. E. Sala, C. B. Field, and H. A. Mooney. 1994. CO₂ alters water use, carbon gain, and yield for the dominant species in a natural grassland. **Oecologia** 98: 257-262. [PDF](#)
37. Soriano, A., O. E. Sala, and S. B. Perelman. 1994. Patch structure and dynamics of a Patagonian steppe. **Vegetatio** 111:127-135. [PDF](#)
36. Aguiar, M. R., and O. E. Sala. 1994. Competition, facilitation, seed distribution, and the origin of patches in a Patagonian steppe. **Oikos** 70: 26-34. [PDF](#)
35. Paruelo, J. M., and O. E. Sala. 1993. The effect of global change on maize production in the Argentinean pampas. **Climate Research** 3:161-167. [PDF](#)
34. Mooney, H. A., and O. E. Sala. 1993. Science and sustainable use. **Ecological Applications** 3:564-566. [PDF](#)
33. Golluscio, R. A., and O. E. Sala. 1993. Plant functional types and ecological strategies in Patagonian forbs. **Journal of Vegetation Science** 4:839-846. [PDF](#)
32. McNaughton, S. J., O. E. Sala, and M. Oesterheld. 1993. Comparative ecology of African and South American arid to subhumid ecosystems. Pages 548-567 in P. Goldblatt, editor. **Biological Relationships between Africa and South America**. Yale University Press, New Haven. [PDF](#)
31. Oesterheld, M., O. E. Sala, and S. J. McNaughton. 1992. The effect of animal husbandry on herbivore-carrying capacity at a regional scale. **Nature** 356:234-236. [PDF](#)
30. Lauenroth, W. K., and O. E. Sala. 1992. Long term forage production of North American shortgrass steppe. **Ecological Applications** 2:397-403. [PDF](#)
29. Sala, O. E., W. K. Lauenroth and W. J. Parton. 1992. Long term soil water dynamics of the shortgrass steppe. **Ecology** 73:1175-1181. [PDF](#)
28. Aguiar, M. R., A. Soriano, and O. E. Sala. 1992. Competition and facilitation in the recruitment of grass seedlings in Patagonia. **Functional Ecology** 6:66-70. [PDF](#)
27. Sala, O. E. 1992. Achieving a sustainable biosphere: an international endeavour. **Trends in Ecology and Evolution** 7:324-325. [PDF](#)
26. Sala, O. E. 1992. Structure and function. Pages 387-395 in A. Soriano (editors) **Río de la Plata Grasslands**. In R.T. Coupland, editor. **Ecosystems of the World, Volume 8A, Natural Grasslands**. Elsevier Scientific Publishing Company, Amsterdam. [PDF](#)
25. Huntley, B. J., E. Ezcurra, E. R. Fuentes, K. Fujii, P. J. Grubb, W. Haber, J. R. E. Harger, M.M. Holland, S. A. Levin, J. Lubchenco, H. A. Mooney, V. Neronov, I. Noble, H. R. Pulliam, P. S. Ramakrishnan, P. G. Risser, O. E. Sala, J. Sarukhan, and W. G. Sombroek. 1991. A sustainable biosphere: the global imperative. **Ecology International** 20:1-14. [PDF](#)
24. Fernández, R. J., O. E. Sala, and R. A. Golluscio. 1991. Woody and herbaceous aboveground production of a Patagonian steppe. **Journal of Range Management** 44:434-437. [PDF](#)

23. Biondini, M. E., W. K. Lauenroth, and O. E. Sala. 1991. Correcting estimates of net primary production: are we overestimating plant production in rangelands? **Journal of Range Management** 44:194-198. [PDF](#)
22. Oesterheld, M., and O. E. Sala. 1990. Grazing effect upon seedling establishment: the role of seed and safe-site availability. **Journal of Vegetation Science** 1:353-358. [PDF](#)
21. Paruelo, J. M., and O. E. Sala. 1990. Characterization of the floods in the Flooding Pampa (Buenos Aires, Argentina): water table dynamics. **Turrialba** 40:5-11. [PDF](#)
20. Sala, O. E., R. A. Golluscio, W. K. Lauenroth and A. Soriano. 1989. Resource partitioning between shrubs and grasses in the Patagonian steppe. **Oecologia** (Berl) 81:501-505. [PDF](#)
19. Sala, O. E., M. E. Biondini, and W. K. Lauenroth. 1989. Bias in estimates of primary production: an analytical solution. **Ecological Modelling** 44:43-55. [PDF](#)
18. Sala, O. E., W. J. Parton, L. A. Joyce, and W. K. Lauenroth. 1988. Primary production of the central grassland region of the United States: spatial pattern and major controls. **Ecology** 69:40-45. [PDF](#)
17. Milchunas, D. G., O. E. Sala, and W. K. Lauenroth. 1988. A generalized model of the effects of grazing by large herbivores on grassland community structure. **American Naturalist** 132:87-106. [PDF](#)
16. Sala, O. E. 1988. The effect of herbivory on vegetation structure. Pages 317-330 in M. J. A. Werger, P. J. M. van der Aart, H. J. During, and J. T. A. Verhoeven, editors. **Plant Form and Vegetation Structure: Adaptation, Plasticity, and Relation to Herbivory** . SPB Academic Publishing bv, The Hague, The Netherlands. [PDF](#)
15. Senft, R. L., M. B. Coughenour, D. W. Bailey, L. R. Rittenhouse, O. E. Sala, and D. M. Swift. 1987. Large herbivore foraging and ecological hierarchies. **BioScience** 37:789-799. [PDF](#)
14. Lauenroth, W. K., O. E. Sala, D. G. Milchunas, and R. W. Lathrop. 1987. Root dynamics of *Bouteloua gracilis* during short-term recovery from drought. **Functional Ecology** 1:117-124. [PDF](#)
13. Soriano, A., and O. E. Sala. 1986. Emergence and survival of *Bromus setifolius* seedlings in different microsites of the Patagonian arid steppe. **Israel Journal of Botany** 35:91-100. [PDF](#)
12. Sala, O. E., M. Oesterheld, R. J. C. León, and A. Soriano. 1986. Grazing effect upon plant community structure in subhumid grasslands of Argentina. **Vegetatio** 67:27-32. [PDF](#)
11. Sala, O. E. 1986. The energy analysis of food production systems and the role of animal production: a review. **Turrialba** 36:91-97. [PDF](#)
10. Sala, O. E., and W. K. Lauenroth. 1985. Root profiles and the ecological effect of light rainshowers in arid and semiarid regions. **American Midland Naturalist** 114:406-408. [PDF](#)

9. Soriano, A., and O. E. Sala. 1983. Ecological strategies in a Patagonian arid steppe. **Vegetation** 56:9-15. [PDF](#)
8. Cauhépé, M., R. J. C. León, O. E. Sala, and A. Soriano. 1982. Pastizales naturales y pasturas cultivadas, dos sistemas complementarios y no opuestos. **Revista Facultad de Agronomía** 3:1-11. [PDF](#)
7. Sala, O. E., W. K. Lauenroth, and W. J. Parton. 1982. Plant recovery following prolonged drought in a shortgrass steppe. **Agricultural Meteorology** 27:49-58. [PDF](#)
6. Sala, O. E., W. K. Lauenroth, and C. P. P. Reid. 1982. Water relations: a new dimension for niche separation between *Bouteloua gracilis* and *Agropyron smithii* in North American semiarid grasslands. **Journal of Applied Ecology** 19:647-657. [PDF](#)
5. Sala, O. E., and W. K. Lauenroth. 1982. Small rainfall events: an ecological role in semiarid regions. **Oecologia** 53:301-304. [PDF](#)
4. Sala, O. E., A. Soriano, and S. Perelman. 1981. Water relations of the major components of a grassland in the Salado River Basin. **Revista Facultad de Agronomía** 2:1-10. [PDF](#)
3. Sala, O. E., W. K. Lauenroth, W. J. Parton, and M. J. Trlica. 1981. Water status of soil and vegetation in a shortgrass steppe. **Oecologia (Berl.)** 48:327-331. [PDF](#)
2. Sala, O. E., V. A. Deregibus, T. Schlichter, and H. Alippe. 1981. Productivity dynamics of a native temperate grassland in Argentina. **Journal of Range Management** 34:48-51. [PDF](#)
1. Soriano, A., O. E. Sala, and R. J. C. Leon, 1980. Actual and potential vegetation of the Coiron Amargo prairie in the SW Chubut. **Boletín de la Sociedad Argentina de Botánica** 19:309-314. [PDF](#)