Curriculum Vitae

Alexey Kaplan

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Education:

1985 B.S.(honors), Applied Mathematics,
Gubkin Russian State University of Oil & Gas, Moscow, Russia
Thesis: "Study of diffusion in domains with small irregularities."
Advisors: V.M.Entov, R.V.Goldstein.

1990 Ph.D., Mechanical Engineering,
Gubkin Russian State Institute of Oil & Gas, Moscow, Russia
Dissertation: "Thermogravitational effects of filtration through a thick porous bed."
Advisor: K.S.Basniev.

Research Experience:

2010–present *Lamont Associate Research Professor,*
LDEO of Columbia University, Palisades, NY

2004–2010 *Doherty Research Scientist,*
LDEO of Columbia University, Palisades, NY

2000–2004 *Doherty Associate Research Scientist,*
LDEO of Columbia University, Palisades, NY

1993–2000 *Intermediate Systems Analyst/Programmer,*
LDEO of Columbia University, Palisades, NY

1991–1993 *Staff Associate,*
LDEO of Columbia University, Palisades, NY

1991 *Visiting Scientist,* **Department of Civil Engineering,**
Columbia University, New York, NY

1990–1991 *Junior Research Scientist,*
Gubkin Russian State University of Oil & Gas, Moscow, Russia

Teaching Experience:

Jan–May 2020 *Mentor,* Project: Error Analysis of *in situ* SST Observations by Andrew Jin,
Earth Institute Undergraduate Research Assistantship Program

Fall 2019 *Guest Lecturer,* Masters-level Statistics (Prof. I. Gladkova),
Data Science Program, Computer Science Dept., CUNY City College
Lecture on ICOADS data and individual platforms' records with a course projects' introduction; attended and discussed students' presentations at the end of the course.

Summer 2019– *Data Set Provider for Statistical Projects,*
Summer Internship program for high-school students (M.Grossberg) & Masters-level Statistics Class (I.Gladkova)
Data Science Program, Computer Science Dept., CUNY City College

Developed a system for selecting and extracting individual platform's records of SST observations with associated data from ICOADS and complementing them with co-located satellite analysis data; re-writing these in a form of a data set, suitable for students' statistical projects, focused on evaluating *in situ* observational error in SST and attempting its modeling.

April 2018 *Guest Lecturer,* Lecture on Kriging and Reduced Space Objective Analyses **QMDA class** (Prof. D. Martinson), **LDEO**

August 2007 *Instructor,* Workshop on Applications of Remote Sensing to Data Assimilation, **University of Maryland**, College Park, MD

November 2004 *Guest Lecturer,* Topics in Advanced Probability, **Columbia University**, New York, NY

February 2004 *Guest Lecturer,* Satellite Meteorology, **University of Kansas**, Lawrence, KS

January 2001 *Guest Lecturer,* Intensive course on Dynamical Downscaling , **IRI**, Palisades, NY

July 2000 *Lecturer,* Workshop on Large Data Sets in the Environmental Sciences, **NCAR**, Boulder, CO

1998–1999 *Adjunct Assistant Professor,* Introduction to Oceanography and Earth Science, **Pace University**, Pleasantville, NY

1991 *Adjunct Assistant Professor,* Remedial Mathematics, **City University of New York**

1988-1990 *Teaching Assistant,* Fluid Dynamics courses, **Gubkin Russian State University of Oil & Gas**, Moscow, Russia

Students:

Ph.D. Students: *Co-advisor (non-primary)*, I.Gorodetskaya (2001-2004), A.R.Karspeck(2001-2004), E.C.Farmer(2004-2005)

Defense Committee Member, G.Bonev, F.Shahriar (both CUNY, 2016-2017)

M.S. Student: *Defense Committee Member,* P.-P.Zhang (University of Albany, 2007)

Undergraduate Thesis: *Mentor,* J.Conan (2001-2002), E.Logan (2008-2009)

LDEO Summer Interns: *Mentor,* A.Lim(2002), D.Gombos(2003), T.Merlis(2004), E.Cremmins(2005), E.Logan(2008)

Other Interns: *Mentor,* M.Richard (Ecole Polytechnique, 2005), S.Riordan(Science Teacher of New York Harbor High School, 2005)

High School Students: *Mentor,* E.Heller(2001-2004), M.Weintraub(2002-2003), H.Vidal(2008-2009)

Undergraduate Research Assistants:

Supervisor, L.Shao(2000),M.Sakuda(2002), A.Vasilyeva(2006-2007), D.Amrhein(2006-2009), L.Chen (2007-2008), J.W.Jang(2008-2009), A.G.Jin(2020)

Staff Research Assistant: *Supervisor,* N.Arnold (2007-2008)

Undergraduate Research Mentoree:

Mentor, D.McKee(2008)

Postdocs: J.E.Smerdon (2005-2007), K.B.Karnauskas (2007-2009), C.Ihara (2008)

Professional Service:

In the LDEO:

2018– *Guest Scientist,* **Earth2Class: Workshops for Educators**

2016– *Presenter,* **LDEO Open House**
2017–2019 *Judge,* **NYC Science & Engineering Fair**
2010–2012 *Member,* **Mentorship Award Committee**
2007–2010 *Member,* **ARCHES Steering Committee**
2005–2008 *Member,* **Storke-Doherty Lecturer Committee**
2004–2007 *Member,* **LDEO Postdoctoral Fellows Committee**
2002–2004 *Guest Scientist,* **Earth2Class: Workshops for Educators**

Outside the LDEO:

2018–2019 *Member*, **20th Century Reanalysis version 3 (20CRv3)** Early Evaluation Task Force
2014–2015 *Reviewer*, **U.N. World Ocean Assessment**, Chapter 5 "Air-Sea Interaction" (part of the U.S. Government Review Team)
2012–2016 *Chair*, **GHRSST Intercomparison Technical Advisory Group**
2010–2014 *Lead Author,* **IPCC WG1 AR5**
2010–2014 *Member,* **U.S. Sea Surface Temperature Science Team**
2009–2012 *Vice-Chair*, **GHRSST Intercomparison Technical Advisory Group**
2009– *Member,* Science Team, **Group for High Resolution Sea Surface Temperature (GHRSST)**
2005–2012 *Member,* Executive Committee, **GCOS Working Group on SST and sea ice analyses**
2004–2012 *Member,* **GCOS AOPC/OOPC Surface Pressure Working Group**
2009–2010 *Convener*, Instrumental Analyses Session, **11th International Meeting on Statistical Climatology**, Edinburgh, U.K., July 12-16, 2010
2009–2010 *Member,* Steering Committee, **U.S. Interim Sea Surface Temperature Science Team (ISSTST)**
2009–2010 *Co-convener and co-editor,* **SST Error Budget Workshop and White Paper**, workshop: University of RI, November 16-18, 2009; white paper released: June 2010
2007–2010 *Member,* "Processes, Observations, Synthesis" (POS) Panel, **U.S. CLIVAR**
2004–2008 *Associate Editor,* **Journal of Geophysical Research – Oceans**
2004–2008 *Associate Member,* **NASA Ocean Surface Topography Science Team**
2004–2007 *Member,* **NASA MODIS Science Team**
1999–2005 *Member,* **GCOS Working Group on SST and sea ice analyses**

Honors and Awards:

2009 Lamont–Doherty Earth Observatory	6th Excellence in Mentoring Award
2005 American Geophysical Union	Editors' Citation for Excellence in Refereeing
1988 Russian State University of Oil & Gas	Outstanding Student Paper Award
1986 Russian Ministry of Higher Education	Outstanding Student Paper Award
1985 College Mathematical Olympiad of Moscow	2nd best result
1980 Mathematical Olympiad of the USSR	2nd degree diploma (7th best result)

Observational Data Set

G. P. Compo, L. C. Slivinski, J. S. Whitaker, P. D. Sardeshmukh, C. McColl, P. Brohan, R. Allan, X. Yin, R. Vose, L. J. Spencer, L. Ashcroft, S. Brönnimann, M. Brunet, D. Camuffo, R. Cornes, T. A. Cram,

R. Crouthamel, F. Dominguez-Castro, J. E. Freeman, J. Gergis, B. S. Giese, E. Hawkins, P. D. Jones, S. Jourdain, A. Kaplan ... & P.Wyszynski. **The International Surface Pressure Databank, version 4.** Dataset published in 2019 via UCAR/NCAR. https://doi.org/10.5065/9eyr-ty90
A.Kaplan is responsible for the component "Early Russian Empire Stations, digitized in LDEO from Kupffer's *Annuaires*: 6 stations, OCR+postprocessing, 1835-1841"

Reconstructed Data Sets

Instrumental:

Reduced space optimal analysis of the global sea surface temperature monthly anomaly fields, 1856–1991:
`http://ingrid.ldgo.columbia.edu/SOURCES/.KAPLAN/.RSA_MOHSST5.cuf/.dataset_documentation.html` and its extension to the present month:
`http://ingrid.ldgo.columbia.edu/SOURCES/.KAPLAN/.EXTENDED/.dataset_documentation.html`

Reduced space optimal interpolation of marine sea level pressure monthly anomaly fields, 1854–1992:
`http://ingrid.ldgo.columbia.edu/SOURCES/.KAPLAN/.RSA_COADS_SLP1.cuf/.dataset_documentation.html`

Expert user guidance at *An Informed Guide to Climate Data Sets* (NCAR):
`http://www.cgd.ucar.edu/cas/guide/Data/kaplan_sst.html` and
`http://www.cgd.ucar.edu/cas/guide/Data/kaplan.html`

Paleoclimatic:

Evans, M.N., A.Kaplan, M.A.Cane 2001, Proxy-Based Pacific SST Reconstructions, *IGBP PAGES/World Data Center A for Paleoclimatology,* Data Contribution Series #2001-068. NOAA/NGDC Paleoclimatology Program, Boulder CO, USA.

LDEO Climate Forecasts

The LDEO5 ENSO forecasts are produced by D.Chen, M.A.Cane, S.E.Zebiak, and A.Kaplan:
`http://rainbow.ldeo.columbia.edu/~dchen/forecast.html`
published monthly by NOAA Climate Prediction Center in their *Climate Diagnostic Bulletin*
`http://www.cpc.noaa.gov/products/CDB/Forecast/forecast.shtml`
and used by IRI for their monthly forecast plume:
`http://iri.columbia.edu/our-expertise/climate/forecasts/enso/current/?enso_tab=enso-sst_table`
and also used for their seasonal climate forecasts by FUNCEME, the Meteorology and Water Resource Center of Ceará State (in northeastern Brazil).

Manuscripts in Preparation

Kaplan, A., Random Error in Ship Sea Surface Temperature Observations and in Their Space-Time Bin Averages, *Geophysical Research Letters*, to be submitted October 2020.

Kaplan, A. B-SHADE is universal kriging with a single drift function, *PLoS ONE*

Kaplan, A. Scaling of geostrophic kinetic energy to the spatial variance of sea surface heights, *J. Marine Sys.*

Kaplan, A., and J.E.Smerdon, Inherent instability of Canonical Correlation Analysis with small number of samples. *J.Climate*

Peer-Reviewed Publications in English

Slivinski, L.C., G.P.Compo, J.S.Whitaker, P.D.Sardeshmukh, B.S.Giese, C.McColl, R.Allan, X.Yin, R.Vose, H.Titchner, J.Kennedy, L.J.Spencer, L.Ashcroft, S.Brönnimann, M.Brunet, D.Camuffo, R.Cornes, H.A. Cram, R.Crouthamel, F.Dominguez-Castro, J.E.Freeman, J.Gergis, E.Hawkins, P.D.Jones, S.Jourdain, A.Kaplan, H.Kubota, F.L.Blancq, T.Lee, A.Lorrey, J.Luterbacher, M.Maugeri, C.J.Mock, G.K.Moore, R.Przybylak, C.Pudmenzky, C.Reason, V.C.Slonosky, C.Smith, B.Tinz, B.Trewin, M.A.Valente, X.L.Wang, C.Wilkinson, K.Wood, P.Wyszynski, 2019: Towards a more reliable historical reanalysis: Improvements for version 3 of the Twentieth Century Reanalysis system, *Quarterly Journal of the Royal Meteorological Society*, **145**(724A), 2876–2908. https://doi.org/10.1002/qj.3598

Giannini, A., and A. Kaplan, 2019: The role of aerosols and greenhouse gases in Sahel drought and recovery, *Climatic Change*, **152**, 449-466. https://doi.org/10.1007/s10584-018-2341-9

Kent, E., J. Kennedy, T. Smith, S. Hirahara, B. Huang, A. Kaplan, D. Parker, C. Atkinson, D. Berry, G. Carella, Y. Fukuda, M. Ishii, P. Jones, F. Lindgren, C. Merchant, S. Morak-Bozzo, N. Rayner, V. Venema, S. Yasui, and H. Zhang, 2017: A call for new approaches to quantifying biases in observations of sea surface temperature, *Bull. Amer. Meteor. Soc.*, **98**, 1601-1616, doi:10.1175/BAMS-D-15-00251.1.

Evans, M.N., J.E. Smerdon, A. Kaplan, S.E. Tolwinski-Ward, and J.F. González-Rouco, 2014: Climate field reconstruction uncertainty arising from multivariate and nonlinear properties of predictors, *Geophys. Res. Lett.*, **41**, 9127-9134, doi: 10.1002/2014GL062063.

Hartmann, D.L., A.M.G. Klein Tank, M. Rusticucci, L.V. Alexander, S. Brönnimann, Y. Charabi, F.J. Dentener, E.J. Dlugokencky, D.R. Easterling, A. Kaplan, B.J. Soden, P.W. Thorne, M. Wild and P.M. Zhai, 2013: Observations: Atmosphere and Surface. In: *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

Hartmann, D.L., A.M.G. Klein Tank, M. Rusticucci, L.V. Alexander, S. Brönnimann, Y. Charabi, F.J. Dentener, E.J. Dlugokencky, D.R. Easterling, A. Kaplan, B.J. Soden, P.W. Thorne, M. Wild and P.M. Zhai, 2013: Observations: Atmosphere and Surface. Supplementary Material. In: *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Available from www.climatechange2013.org and www.ipcc.ch.

Smerdon, J.E., A.Kaplan, and D.E.Amrhein, 2013: Reply to comments by Rutherford et al. on "Erroneous model field representations in multiple pseudoproxy studies: Corrections and implications," *J. Climate*,

26, 3485-3486.

Karspeck, A.R., A.Kaplan, S.R.Sain, 2012: Bayesian modeling and ensemble reconstruction of mid-scale spatial variability in North Atlantic sea surface temperatures for 1850-2008, *Quarterly J. Royal Meteorol. Soc.*, **138**, 234-248. doi: 10.1002/qj.900.

Kaplan, A., 2011: Patterns and indices of climate variability [in "*State of the Climate in 2010*"]. *Bull. Amer. Meteor. Soc.*, **92**(6), S161-S163.

Kaplan, A., 2011: Discussion of B.B.McShane and A.J.Wyner "A Statistical Analysis of Multiple Temperature Proxies: Are Reconstructions of Surface Temperatures Over the Last 1000 Years Reliable?", *Annals of Applied Statistics*, **5**, 47-51.

Smerdon, J.E., A.Kaplan, E. Zorita, J.F. González-Rouco, and M.N. Evans, 2011: Spatial Performance of Four Climate Field Reconstruction Methods Targeting the Common Era, *Geophys. Res. Lett.*, **38**, L11705, doi: 10.1029/2011GL047372.

Smerdon, J.E., A.Kaplan, D.Chang, and M.N.Evans, 2011: Corrigendum: A pseudoproxy evaluation of the CCA and RegEM methods for reconstructing climate fields of the last millennium, *J. Climate*, **24**, 1284-1309.

Rayner, N.A., A.Kaplan, E.C.Kent, R.W.Reynolds, P.Brohan, K.S.Casey, J.J.Kennedy, S.D.Woodruff, T.M.Smith, C.Donlon, L.A.Breivik, S.Eastwood, M.Ishii, T.Brandon, 2010: Evaluating climate variability and change from modern and historical SST observations, In: *Proceedings of OceanObs09: Sustained Ocean Observations and Information for Society (Vol. 2), Venice, Italy, 21-25 September 2009*, J.Hall, D.E.Harrison, and D.Stammer, Eds., ESA Publication WPP-306.

Smerdon, J.E., A.Kaplan, and D.E.Amrhein, 2010: Erroneous model field representations in multiple pseudoproxy studies: Corrections and implications, *J. Climate*, **23**, 5548-5554, doi:10.1175/2010JCLI3742.1.

Smerdon, J.E., A.Kaplan, D.Chang, and M.N.Evans, 2010: A pseudoproxy evaluation of the CCA and RegEM methods for reconstructing climate fields of the last millennium, *J. Climate*, **23**, 4856-4880, doi:10.1175/2010JCLI3328.1.

Arbuszewski, J., P.deMenocal, A.Kaplan, E.C.Farmer, 2010: On the fidelity of shell-derived $\delta^{18}O$ seawater estimates, *Earth and Planetary Science Letters*, **300**, 185-196.

Ilin, A., and A.Kaplan, 2009: Bayesian PCA for reconstruction of historical sea surface temperatures, In: *Proceedings of International Joint Conference on Neural Networks (IJCNN 2009)*, Atlanta, GA, USA, June 14-19, 2009, paper 0246, pp.1322-1327.

Karnauskas, K.B., R.Seager, A.Kaplan, Y.Kushnir, and M.A.Cane, 2009: Observed strengthening of the zonal sea surface temperature gradient across the equatorial Pacific Ocean, *J. Climate*, **22**, 4316-4321.

Smerdon, J.E., A.Kaplan, and D. Chang, 2008: On the origin of the standardization sensitivity in RegEM climate field reconstructions, *J. Climate*, **21**, 6710-6723.

Linsley, B.K., P.Zhang, A.Kaplan, S.S.Howe, and G.M.Wellington, 2008: Interdecadal-decadal climate variability from multicoral oxygen isotope records in the South Pacific Convergence Zone region since 1650 A.D., *Paleoceanography*, **23**, PA2219, doi:10.1029/2007PA001539.

Ihara, C., Y.Kushnir, M.A.Cane, and A.Kaplan, 2008: Timing of El Nino-related warming and Indian summer monsoon rainfall, *J. Climate*, **21**, 2711-2719.

Smerdon, J.E., and A. Kaplan, 2007: Comment on "Testing the fidelity of methods used in proxy-based reconstructions of past climate" by Mann et al. (J.Climate, 18:4097-4107, 2005): The role of the standardization interval, *J.Climate*, **20**, 5666-5670.

Huang, H.-P., A.Kaplan, E.N.Curchitser, and N.A. Maximenko, 2007: The degree of anisotropy for mid-ocean currents from satellite observations and an eddy-permitting model simulation, *J. Geophys. Res.*, **112**, C09005, doi:10.1029/2007JC004105.

Farmer, E. C., A. Kaplan, P. B. de Menocal, and J. Lynch-Stieglitz, 2007: Corroborating ecological depth preferences of planktonic foraminifera in the tropical Atlantic with the stable oxygen isotope ratios of core top specimens, *Paleoceanography*, **22**, PA3205, doi:10.1029/2006PA001361.

Emile-Geay, J., M. Cane, R. Seager, A. Kaplan, and P. Almasi, 2007: El Niño as a mediator of the solar influence on climate, *Paleoceanography*, **22**, PA3210, doi:10.1029/2006PA001304.

Black, D.E., M.A.Abahazi, R.C.Thunell, A.Kaplan, E.J.Tappa, L.C.Peterson, 2007: An eight-century tropical Atlantic SST record: 20th century warming and Atlantic hurricane frequency, *Paleoceanography*, **22**, PA4204, doi:10.1029/2007PA001427.

Kent, E.C. and A. Kaplan, 2006: Towards estimating climatic trends in SST. Part 3: Systematic biases, *J. Atmos. Oceanic Technol.*, **23**(3), 487-500.

Karspeck, A.R., A. Kaplan, M.A. Cane, 2006: Predictability loss in an intermediate ENSO model due to initial error and atmospheric noise, *J.Climate*, **19**, 3572-3588.

Linsley, B.K., A.Kaplan, Y.Gouriou, J.Salinger, P.B.deMenocal, G.Wellington, S.Howe, 2006: Tracking the extent of the South Pacific Convergence Zone since 1619 AD, *Geochemistry, Geophysics, Geosystems*, **7**, Q05003, doi:10.1029/2005GC001115.

Evans, M.N., B.K. Reichert, A. Kaplan, K.J.Anchukaitis, E.A. Vaganov, M.K. Hughes, M.A. Cane, 2006: A forward modeling approach to paleoclimatic interpretation of tree-ring data, *J. Geophys. Res.*, **111**, G03008, doi:10.1029/2006JG000166.

Anchukaitis, K.J., M.N.Evans, A.Kaplan, E.A.Vaganov, H.D.Grissino-Mayer, M.K.Hughes, M.A.Cane, 2006: Forward modeling of regional-scale tree-ring patterns in the southeastern United States and the recent influence of summer drought, *Geophysical Research Letters*, **33**(4), L04705, doi:10.1029/2005GL025050.

Gorodetskaya, I., L.-B.Tremblay, M.A. Cane, and A. Kaplan, 2006: The effects of sea ice and land snow concentrations on planetary albedo from the Earth Radiation Budget Experiment *Atmosphere–Ocean*, **44**, 195-205.

Fairbanks, R.G., T.-C.Chiu, L.Cao, R.A. Mortlock, A.Kaplan, 2006: Rigorous quality control criteria for screening coral samples and radiocarbon calibration data based on ^{14}C, $^{230}Th/^{234}U/^{238}U$ and $^{231}Pa/^{235}U$ dated corals. – A reply to the comment by Yusuke Yokoyama and Tezer M. Esat on "Extending the radiocarbon calibration beyond 26,000 years before present using fossil corals" by T.-C. Chiu, R.G. Fairbanks, R.A. Mortlock, A.L. Bloom (Quaternary Science Reviews 24 (2005) 1797-1808), *Quaternary Science Reviews*, **25**(2), 3084-3087.

Shaman, J., M.A.Cane, A.Kaplan, 2005: The Relationship between Tibetan Snow Depth, ENSO, River Discharge and the Monsoons of Bangladesh. *Int. J. Remote Sensing*, **26**(17), 3735-3748.

Fairbanks, R.G., R.A. Mortlock, T.-C. Chiu, L. Cao, A. Kaplan, T.P. Guilderson, T.W. Fairbanks, A.L. Bloom, P.M. Grootes and M.-J. Nadeau, 2005. Marine Radiocarbon Calibration Curve Spanning 10,000 to 50,000 Years B.P. Based on Paired $^{230}Th/^{234}U/^{238}U$ and ^{14}C Dates on Pristine Corals. *Quaternary Science Reviews*, **24**, 1781-1796. doi:10.1016/j.quascierev.2005.04.007.

Curchitser, E.N., D.B. Haidvogel, A.J. Hermann, E.L. Dobbins, T.M.Powell, and A.Kaplan, 2005: Multi-scale modeling of the North Pacific Ocean: Assessment and analysis of simulated basin-scale variability (1996-2003), *J. Geophys. Res.*, **110**, C11021, doi10.1029/2005JC002902.

Kaplan, A., M.A. Cane, D. Chen, D.L. Witter, and R.E. Cheney, 2004: Small-scale variability and model error in tropical Pacific sea level, *J. Geophys. Res.*, **109**, C02001, doi:10.1029/2002JC001743.

Evans, M.N. and A. Kaplan, 2004: The Pacific sector Hadley and Walker Circulation in historical marine wind analyses: Potential for reconstruction from proxy data, *The Hadley Circulation: Past, Present, Future*, Eds. H.F. Diaz and R.S. Bradley, Kluwer Academic Publishers, Netherland, 239-258.

Chen, D., M.A. Cane, A. Kaplan, S.E. Zebiak and D. Huang, 2004: Predictability of El Niño over the past 148 years, *Nature*, **428**, 733-736.

Black D.E., R.C. Thunell, A. Kaplan, L.C. Peterson, and E.J.Tappa, 2004: A 2000-year record of Caribbean and tropical North Atlantic hydrographic variability, *Paleoceanography*, **19**, PA2022, doi:10.1029/ 2003PA000982.

Seager, R., A. Karspeck, M.A. Cane, Y. Kushnir, A. Giannini, A. Kaplan, B. Kerman, J. Velez, 2004: Predicting Pacific decadal variability. *Earth Climate: The ocean-atmosphere interaction*, C. Wang and S.-P. Xie and J. A. Carton, ed., American Geophysical Union, Washington, DC, pp. 115-130.

Kaplan A., M.A. Cane, and Y. Kushnir, 2003: Correction to "Reduced space approach to the optimal analysis interpolation of historical marine observations: Accomplishments, difficulties, and prospects", in *Advances in the Applications of Marine Climatology: The Dynamic Part of the WMO Guide to the Applications of Marine Climatology*, WMO/TD-1081, World Meteorological Organization, Geneva, Switzerland, correction p. 213.

Rayner, N.A., D.E. Parker, E.B. Horton, C.K. Folland, L.V. Alexander, D.P. Rowell, E.C. Kent, and A. Kaplan, 2003: Global analyses of sea surface temperature, sea ice, and night marine air temperature since the late nineteenth century *J. Geophys. Res.*, **108**(14), 10.1029/2002JD002670.

Evans, M. N., A. Kaplan, and M.A. Cane, 2002: Pacific sea surface temperature field reconstruction from coral $\delta^{18}O$ data using reduced space objective analysis, *Paleoceanography*, **17**(1), 10.1029/2000PA000590.

Cullen, H.M, A. Kaplan, P. Arkin, P. deMenocal, 2002: Impact of the North Atlantic Oscillation on Middle Eastern climate and streamflow. *Climatic Change*, **55**, 315-338.

Cañizares, R., A. Kaplan, M.A. Cane, D. Chen, S.E. Zebiak, 2001: Use of data assimilation via linear low order models for the initialization of ENSO predictions. *J. Geophys. Res.*, **106**, 30947–30959.

Evans M.N., A. Kaplan, M.A. Cane, and R. Villalba, 2001: Globality and optimality in climate field reconstructions from proxy data, in V. Markgraf (ed.) *Present and Past Inter-Hemispheric Linkages in the Americas and Their Societal Effects.*, Cambridge University Press, p. 53–72.

Evans, M.N., M.A. Cane, D.P. Schrag, A. Kaplan, B.K. Linsley, R. Villalba and G.M. Wellington, 2001: Support for tropically-driven Pacific decadal variability based on paleoproxy evidence, *Geophys. Res. Lett.*, 28, 3689-3693.

Kaplan A., M.A. Cane, and Y. Kushnir, 2001: Reduced space approach to the optimal analysis interpolation of historical marine observations: Accomplishments, difficulties, and prospects, in *Advances in the Applications of Marine Climatology: The Dynamic Part of the WMO Guide to the Applications of Marine Climatology*, WMO/TD-1081, World Meteorological Organization, Geneva, Switzerland, pp. 199-216.

Chen, D., M.A. Cane, S.E. Zebiak, R. Cañizares, and A. Kaplan, 2000: Bias correction of an ocean-atmosphere coupled model. *Geophys. Res. Lett.*, **27**, 2585-2588.

Kaplan A., Y. Kushnir, M.A. Cane, 2000: Reduced space optimal interpolation of historical marine sea level pressure: 1854-1992, *J. Climate*, **13**, 2987-3002.

Evans, M., A. Kaplan, and M. Cane, 2000: Intercomparison of coral oxygen isotope data and historical sea surface temperature (SST): Potential for coral-based SST field reconstructions, *Paleoceanography*, **15**, 551-563.

Black, D.E., L.C. Peterson, J.T. Overpeck, A. Kaplan, M. Evans, M. Kashgarian, 1999: Decade- to century-scale dynamics in the North Atlantic revealed by an 825-year marine laminated sediment record. *Science*, **286**, 1709-1713.

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Kaplan, A., M. Cane, Y. Kushnir, A. Clement, M. Blumenthal, and B. Rajagopalan, 1998: Analyses of global sea surface temperature 1856-1991, *J. Geophys. Res.*, **103**, 18567-18589.

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Kaplan, A., Y. Kushnir, M. Cane, and M. Blumenthal, 1997: Reduced space optimal analysis for historical datasets: 136 years of Atlantic sea surface temperatures, *J. Geophys. Res.*, **102**, 27835–27860.

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Cane, M.A., A. Kaplan, R.N. Miller, B. Tang, E.C. Hackert, and A.J. Busalacchi, 1996: Mapping tropical Pacific sea level: data assimilation via a reduced state space Kalman filter. *J. Geophys. Res.*, **101**, 22599–22617.

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Published English Translations of Russian / U.S.S.R. Academy of Sciences Publications

Basniev, K.S. and A.G. Kaplan, 1993: Utilization of the natural thermogravitational effects in the extractive working of gas condensate-oil fields. *Transactions of the Russian Academy of Sciences.* Translations from Russian by Scripta Technica, Inc., 42-45.

Rapoport, L.I. and A.G. Kaplan, 1989: Elastic wave velocities and absorption in porous media saturated with an anomalously compressible fluid. *Academy of Sciences of the USSR. Izvestiya. Physics of Solid Earth* (translations from Russian), **25**, 63-65.

Peer-Reviewed Publications in Russian

Kaplan, A.G., N.M.Kulpina, V.M.Kazakov, A.N.Timofeyev, 1992: Possibility of hydraulic well-logging for the Karachaganak gas condensate field. *Gas Industry*, No.4, 32-34.

Kaplan, A.G., 1991: Thermodynamical works of I.A. Charniy. *Fluid Mechanics of Oil and Gas. Transactions of I.M.Gubkin Moscow Institute of Oil and Gas*, **228**, 173-178.

Basniev, K.S. and A.G. Kaplan, 1991: Use of natural thermogravitational effects for development of oil, gas, and condensate fields. *Doklady Akademii Nauk SSSR*, **318**, 1328–1331.

Kaplan, A.G. and Basniev, K.S., 1990: A thermal field caused by the vertical filtration through a thick stratum. *All-Soviet Institute for Economical Problems and Management in Gas Industry. Express Information,* No. 1, pp. 31-35.

Rapoport, L.I. and A.G. Kaplan, 1989: On elastic wave velocities and attenuation in a porous medium saturated with a fluid having abnormally high compressibility. *Izvestiya Akademii Nauk SSSR, Fizika Zemli* , No. 9, 78-82.

Kaplan, A.G., 1988: Thermal inversion during throttling within the oil and gas bearing formation, in *Filtration of inhomogeneous systems. Transactions of Research Institute of Natural Gases and Gas Technologies (VNIIGAZ)*, Eds: K.S. Basniyev and G.P.Tsybulsky, Moscow, pp. 122-129.

Kaplan, A., 1982: Problem solution, M701, *Kvant*, No. 5, 22-23.

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Selected not peer-reviewed publications

Kaplan, A., 2019: Error Analysis of *in situ* Sea Surface Temperature Data: Introduction into Students' Course Projects, unpublished manuscript. Available at:
http://rainbow.ldeo.columbia.edu/∼alexeyk/Papers/Kaplan2019_ICOADS4students.pdf

Interim Sea Surface Temperature Science Team (ISSTST), 2010: Sea Surface Temperature Error Budget: White Paper. `http://www.ssterrorbudget.org/ISSTST/White_Paper.html`

Kaplan, A., M.A.Cane, and Y.Kushnir, 2003: Toward R1850 reanalysis. Preliminary notes for *UCAR Workshop on Ongoing Analysis of the Climate System*, NCAR, Boulder, CO, 18-20 August 2003. [Available at `http://www.ofps.ucar.edu/joss_psg/meetings/climatesystem/R1850notes.pdf`].

Kent, E.C., A. Kaplan, and P.K.Taylor, 2003: Finding the true temperature of the ocean surface, *Extended Abstracts, 83rd AMS Annual Meeting, 9-13 February 2003, Long Beach, California*, JP4.14. [Available at `http://ams.confex.com/ams/annual2003/techprogram/paper_58136.htm`].

Kushnir, Y., J. Miller, and A. Kaplan, 2002: Historical Surface Marine Wind Analyses and Data in the Tropical Atlantic Region, *Report to the CLIVAR Atlantic Implementation Panel*. [Available at `http://www.clivar.org/organization/atlantic/winds4web/TropicalAtlanticWinds.htm`].

Kaplan, A., D. Witter, M.A. Cane, and Y. Kushnir, 2001: Toward optimal reconstruction of ocean surface flux fields: Exploring wind stress - sea level heights constraint, *WCRP/SCOR Workshop on Intercomparison and Validation of Ocean-Atmosphere Flux Fields* (Bolger Center, Potomac, MD, USA, 21-24 May, 2001), WCRP-115, WMO/TD-No. 1083, World Meteorological Organization, Geneva, Switzerland, pp. 142-147. [Available at `http://www.soc.soton.ac.uk/JRD/MET/WGASF/workshop/PDF/kaplan.pdf`].

Tippett,M.K., M.Ji and A. Kaplan, 2000: Impact of temperature error models in a univariate ocean data assimilation system, *CLIVAR Exchanges*, **17**, September 2000, pp. 1-3. [Available at `http://www.clivar.org/publications/exchanges/ex17/spaper/s1705.pdf`].

Kaplan, A., M.A. Cane, and Y. Kushnir, 1999: Reduced space approach to the optimal analysis of historical marine observations: Accomplishments, difficulties, and prospects. *CLIMAR 99, WMO Workshop on Advances in Marine Climatology, Vancouver, Canada, 8-15 September, 1999*, Proceedings, WMO/TD-1062, World Meteorological Organization, Geneva, Switzerland, pp. 275-283. [Available at `http://rainbow.ldeo.columbia.edu/∼alexeyk/Papers/climarxa.pdf`].

Knutson, T.R., A. Kaplan, and N.A. Rayner, 1999: A Note on 20th Century Equatorial Pacific Sea Surface Temperatures, [Available at `http://www.gfdl.gov/∼tk/Note_on_Eq_Pac_SSTs.html`].

Kaplan, A., Y. Kushnir, M.A. Cane, and M.B. Blumenthal, 1996: Statistical analysis of historical Atlantic SST data: methodology and application. *ACCP Notes*, **III**, No.1, 4–7.

Kushnir, Y. and A. Kaplan, 1994: Dynamical constraints for the analysis of sea level pressure and surface wind over the world ocean. *Proceedings, International Winds Workshop*, H.F.Diaz and H.-J.Isemer, Eds., US Dept of Commerce, 91-101.

Recent Presentations (Last Two Years)

February 2020 **Ocean Sciences Meeting 2020**, San Diego, CA, 16-21 February 2019
A. Kaplan, Y. Kushnir, M.A. Cane: Reconstructing Subsurface Ocean Temperature and Salinity by the Reduced Space Objective Analysis With Dynamical Constraints, *Poster* OD34B-3448
A. Kaplan: In Situ Sea Surface Temperature Observations and Their Errors: Student's Projects Based on ICOADS Data, *Poster* ED24D-3623

June 2019 **20th Science Team Meeting, Group for High Resolution SST** (GHRSST-XX), Frascati, Italy, 3-7 June 2019
A. Kaplan: CCI OSTIA as the Standard of Truth: Detailed Error Models for *in situ* SST Data From Ships and Other Platforms, *Talk.*

May 2019 **2nd PAGES Workshop** *Data Assimilation, Reanalyses and Proxy System Modeling in Paleoenvironmental Science* (**DAPS**), College Park, MD, May 29-31.
H.Goosse, A.Kaplan, J.Franke: Paleoclimatic reanalyses and data assimilation: State of the art, next steps. How valuable would fully online data assimilation be? *Talk* by H.Goosse

May 2019 **CLIMAR-5 & Marine Winds Workshop**, Hamburg, Germany, 6-9 May 2019
A.Kaplan: Small-scale variability and error in space-time bin averages for *in situ* SST measurements: The role of a platform type. *Talk.*
A.Kaplan, Y.Kushnir, M.A.Cane, Reconstructing subsurface ocean temperature and salinity using reduced space analyses and dynamical constraints. *Poster.*
A.Kaplan, Historical reconstructions of marine surface winds: Prospects and challenges. *Talk.*

December 2018 **AGU Fall Meeting**, Washington DC, December 10-14, 2018
A. Kaplan: Error Models for the in situ Sea Surface Temperature, Averaged Over Space-Time Bins. *Poster* NG21A-0804.
D.E. Lee, R. Seager, N. Henderson, M.A. Cane, A. Kaplan: Why has the subsurface Equatorial Pacific cooled in a warming world? *Poster* OS41E-2062.

June 2018 **19th Science Team Meeting, Group for High Resolution SST** (GHRSST-XIX), Darmstadt, Germany, 4-8 June 2018.
A. Kaplan: Near-Lagrangian Platform (Drifting Buoy) + Near-Conservative Variable (SST) = ?, *Poster.*

May 2018 **50th International Liege Colloquium on Ocean Dynamics**, Liege, Belgium, 28 May - 1 June 2018
A. Kaplan: Small-Scale Variability in Sea Surface Temperature: Estimates From Drifting Buoys and Other Sources, *Talk.*

April 2018 **EGU General Assembly**, Vienna, Austria, 8-13 April 2018
A. Kaplan, Y. Kushnir, and M.A. Cane: Reduced Space Interpolation of Subsurface Ocean Properties with Dynamical Constraints. *Talk* EGU2018-16269,

Invited presentations, seminars, panels

February 2013 **U.S. Clivar ENSO Diversity Workshop**,

Boulder, CO, 6-8 February 2013, *Invited talk.*

December 2010 **2010 AGU Fall Meeting**, San Francisco, CA, special session "Uncertainty, Error, and Quality of Observational Data" (IN14), *Invited talk.*

February 2010 **2010 Ocean Sciences Meeting**, Portland, OR, special session "Basin Scale Interpolation and Mapping of Ocean Properties (IT17)," *Invited presentation.*

September 2009 **Colloquium of the Geographical Institute**, University of Bern, Switzerland, *Seminar.*

June 2009 **NWRA Seminar Series**, NorthWest Research Associates, Bellevue, WA, *Seminar.*

February 2009 **10th annual CAOS workshop "Oceanography at the Observational and Modeling Frontier: Submesoscale Dynamics"**, Courant Institute, New York University, New York, NY, *Invited Talk.*

October 2008 **Earth Institute Brown Bag Series**, Columbia University, New York, NY, *Seminar.*

September 2008 **Applied Mathematics Colloquium**, Columbia University, New York, NY, *Seminar.*

September 2008 **Physical Oceanography Seminar**, WHOI, Woods Hole, MA, *Seminar.*

July 2008 **Workshop on Probabilistic and Statistical Methods in Ocean, Atmosphere, and Climate Dynamics**, Pacific Institute for Mathematical Sciences, Victoria, Canada, *Invited Talk.*

March 2008 **2008 Ocean Sciences Meeting**, Orlando, FL, *Solicited Talk.*

November 2007 **Atmospheric Physics Seminar Series**, University of Toronto, Canada, *Seminar.*

August 2007 **10th International Meeting on Statistical Climatology**, Beijing, China, *Plenary Talk.*

May 2007 **Workshop on Application of Random Matrices**, Institute for Mathematics Applied to Geosciences (IMAGe), NCAR, *Invited Talk.*

May 2007 **Workshop on Inverse Problems at Columbia University**, Columbia University, New York, NY, *Invited Talk.*

March 2007 **Oceanography Seminar Series**, Australian Defence Force Academy, Canberra, Australia, *Seminar.*

February 2007 **Institute for Mathematics Applied to Geosciences (IMAGe) Seminar Series** National Center for Atmospheric Research, Boulder, CO, *Seminar.*

June 2006 **26th IUGG Conference on Mathematical Geophysics (CMG-2006)** Sea of Galilee, Israel, *Invited Talk.*

October 2005 **Workshop on Advances in the Use of Historical Marine Climate Data (MARCDAT-II),** U.K. Met Office, Exeter, U.K., *Talk.*

March 2005 **Physical Oceanography Seminar Series**, Oregon State University, Corvallis, OR, *Seminar.*

September 2004 International Workshop on **Understanding Vertical Profiles of Temperature** *Trends,* Hadley Centre, UK Met Office, Exeter, UK, *Invited talk.*

April 2004 **EGU 1st General Assembly,** Nice, France, *Invited talk.*

April 2004 International Workshop **Tree Rings and Climate: Sharpening the Focus,** Tucson, AZ, *Invited Panelist.*

February 2004 **Research Colloquium,**

University of Kansas, *Seminar.*

February 2004 **Symposium**, Max Planck Institute for Meteorology, Hamburg, Germany, *Invited talk.*

November 2003 **CLIMAR-II: 2nd JCOMM Workshop on Advances in Marine Climatology,** Brussels, Belgium, *2 talks.*

May 2003 **NOAA Workshop on Data Assimilation in Coupled Ocean-Atmosphere** *Models,* Portland, OR, *Invited talk.*

May 2002 **Workshop on Data Assimilation in the Oceanic and Atmospheric Sciences,** Institute for Mathematics and Its Applications, Minneapolis, MN, *Invited talk.*

January 2002 **Workshop on Advances in the Use of Historical Marine Climate Data**, NOAA Climate Diagnostic Center, Boulder, CO. *2 invited talks.*

August 2001 **Hadley Centre Seminar Series**, U.K. Met Office. Bracknell, U.K. *Seminar.*

July 2001 **Physical Oceanography and Climate Seminar Series**, Southampton Oceanography Centre, U.K. *Seminar.*

July 2001 **Climate Research Unit Seminar Series**, University of East Anglia, Norwich, U.K. *Seminar.*

May 2001 **NSF Hydroclimate Data Workshop** IRI, Palisades, NY, USA. *Invited talk.*

April 2001 **Workshop on Late Holocene Climate Reconstructions**, University of Virginia, Charlottesville, VA. *Invited talk.*

August 2000 **JISAO Seminar Series**, University of Washington, Seattle. *Seminar.*

July 2000 **Workshop on Large Data Sets in the Environmental Sciences**, National Center for Atmospheric Research, Boulder, CO. *2 invited lectures.*

April 2000 **European Geophysical Society, XXV General Assembly**, Nice, France. *Solicited paper.*

November 1999 **Climate Mini-Workshop on Climate Change in the Last Fifty Years**, Goddard Institute for Space Studies, New York. *Invited talk.*

November 1999 **Climate Diagnostic Center Seminar Series**, Boulder, CO. *Seminar.*

March 1999 **Physical Oceanography Seminar Series**, Massachusetts Institute of Technology, Boston, MA. *Seminar.*

November 1998 **GCOS Workshop on Global Sea Surface Temperature Data Sets**, International Research Institute for Climate Prediction, Palisades, NY. *Invited talk.*

August 1998 **Woods Hole Oceanographic Institute**, Woods Hole, MA. *Seminar.*

March 1998 **Pole-Equator-Pole Paleoclimate of the Americas (PEP-1)**, Merida, Venezuela. *Invited talk* – given by a co-author (M.Evans) b/c of AK's visa problem.

June 1997 **Workshop on Cross-Validation of Proxy Climate Data and the Instrumental Records**, JISAO, Seattle, WA. *Invited talk.*

May 1997 **Hadley Centre Seminar Series**, U.K. Met Office. Bracknell, U.K. *Seminar.*

April 1997 **Ocean Modeling Seminar Series**, Goddard Space Flight Center, Greenbelt, MD. *Seminar.*

February 1997 **National Centers for Environmental Prediction**, Camp Springs, MD. *Seminar.*

January 1997	**Climate and Global Dynamics Division**, National Center for Atmospheric Research, Boulder, CO. *Seminar.*
October 1995	**Colloquium in Atmosphere–Ocean Science**, Courant Institute for Mathematical Sciences, NYU. *Seminar.*

Competitive external funding awards

[Note: For multi-institutional grants, only LDEO budget totals are given]

Current awards

(NSF) AGS 20-02452 "Collaborative Research: P2C2 – Insights Into Tropical Pacific Climate From Paleoproxy Data Assimilation Into an Intermediate Complexity Dynamical Model" (Kaplan, A., PI; Cane, M., Linsley, B., Cook, E., Co-PIs; w/Correa, G.), period: 6/1/20 - 5/31/23, Total: $485,398, salary budgeted for A.Kaplan: 1.5mon/yr, total 4.5 months.

(NSF) OCE 18-53717 "Sampling Peculiarity of Sea Surface Temperature Data Sets from Drifting Buoys due to the Lagrangian Nature of Observing Platforms" (Kaplan, A., PI), period: 9/1/19 - 8/31/22. Total: $392,069, salary budgeted for A.Kaplan: 3mon/yr, total 9 months.

(NOAA) NA17OAR4310156 "Interpolation of Subsurface Ocean Properties and Indices of Climate Variability" (Kaplan, A., PI; Kushnir, Y., Cane, M., Co-PIs), period: 9/1/2017-8/31/2020. Total: $442,041, salary budgeted for A.Kaplan: 2mon/yr, total 6 months.

Finished projects

(ONR) "Extended-Range Prediction With Low-Dimensional, Stochastic-Dynamic Models: A Data-Driven Approach" by M.Ghil (UCLA PI), M.Tippett (LDEO PI), UCLA co-PIs: M.D.Chekroun and D. Kondrashov; LDEO Co-PIs: S.Camargo, M.Cane, D.Chen, A.Kaplan, Y.Kushnir, A.Robertson, A.Sobel, M.Ting, X.Yuan. Total: $5,000,000.00, 6/1/2012-5/31/2017.

(NASA) Error and Variability in Satellite SST Data and Global High-Resolution Analyses (NNX09AF44G). Total: $601,291, period: 2009-2013 (PI: A.Kaplan)

(NSF) Collaborative Research: Locally-constrained climate field reconstructions of the last millenium: Methods and application. Total: $274,418, period 2009-2012. (PI: J.E.Smerdon, Co-PI: A.Kaplan; PI: M.N.Evans in University of Maryland)

(NASA) Analysis of ENSO dynamics and thermodynamics in the Western pacific warm pool - an application of multi-sensor satellite observations (NNX09AF55G). Total: $500,611, period: 2009-2013 (PI: D.Chen, Co-PI: A.Kaplan)

(NOAA) Error models for remotely sensed sea surface heights and temperatures in ocean data assimilation (NA03OAR4320179/Task 3, Proj 23). Total: $310,422, period: 2007-2010 (PI: A.Kaplan, co-PI: M.A.Cane).

(NOAA) Generation and evaluation of long-term retrospective forecasts with NCEP climate forecast system: Predictability of ENSO and drought. Total: $269,080, period: 2008-2011 (PI: M.Cane with co-PIs D.Chen and A.Kaplan).

(NOAA) Spectral characteristics of climate proxies and their expression in climate fields reconstructions (NA07OAR4310060). Total: $308,639, period: 2007-2010 (PI: J.Smerdon, with co-PIs: A.Kaplan, E.Cook, M.Evans).

(NOAA) Abrupt climate change in a warming world: Lessons from Holocene paleo and modern instrumental records, and model simulations. Total: $3,315,379, period: 2008-2010 (PI: R.Seager, with co-PIs: M.Cane, Y.Kushnir, M.Ting, A.Kaplan, N.Naik, X.Yuan, D.Martinson, J.Smerdon)

(ONR) Testing parameterizations of submesoscale variability: Resolutions and power spectra (NN00014-05-1-0492). Total: $355,016, period: 2005-2008 (lead PI A.Kaplan with co-PIs E.Curchitser, H.-P. Huang, and W.G.Large (NCAR)).

(NOAA) Predictions and predictability of El Niño events: Epochs and biases (NA03OAR4320179/Task 3, Proj 18). Total: $590,000, period: 2005-2008 (M.Cane (PI), D.Chen (co-PI), A.Kaplan (co-PI)).

(NASA) Application of altimeter observations to tropical ocean modeling and climate prediction (JPLCIT 126578801). Total: $789,136, period: 2004-2008 (D.Chen (PI), A.Kaplan (co-PI), and M.Cane (co-PI)).

(NSF) CMG collaborative research: Gridded analyses of large multi-scale data sets with ensemble representation of uncertainty (ATM04-17909). Total: $225,043, period: 2004-2008 (Lead LDEO PI A.Kaplan, in collaboration with S.Sain, PI in U of Colorado at Denver).

(NOAA) Multivariate approach to ensemble reconstruction of historical marine surface winds from ships and satellites (NA03OAR4320179/ Proj. 4). Total: $275,671, period: 2004-2008 (A.Kaplan (PI) with M.Cane and Y.Kushnir (co-PIs)).

(NASA) Small-scale variability in sea surface temperatures and climate analyses error (NNG04GL28G). Total: $309,942, period: 2004-2008 (A.Kaplan (PI) with M.Cane (co-PI)).

(NSF) Collaborative Research: Developing a network of coral records documenting South Pacific variability (OCE 03-17941). Total: $44,921, period: 2003-2008 (LDEO PI A.Kaplan, collaboration with PIs B.Linsley (SUNY at Albany) and G.Wellington (U of Houston)).

(NSF) Collaborative Research: WCR: Hydrology of Central and Southwest Asia: Connections between regional atmospheric circulation and large-scale climate variability (ATM 02-33651). Total: $56,199, period: 2003-2007, (LDEO PI A.Kaplan with Columbia U co-PI M.Tippett(IRI), collaboration w/ PIs H.Cullen (GA Tech) and M.Barlow (AER)).

(NOAA) Errors in sea level height analysis: accounting for the small-scale and short-term variability (NA03NES4400012). Total: $341,891, period: 2003-2006 (A.Kaplan (PI) with M.Cane (co-PI)).

(NOAA) A 19th century data catalog for New England and adjacent states (UMASS CU02226201). Total: $24,360, period: 2003-2006 (LDEO PI A.Kaplan in collaboration with R.Bradley (U of MA) and G.Zielinski (U of ME)).

(NOAA) Dynamical forecasting of ENSO: A contribution to the IRI network (NA03OAR4320179). Total: $504,000, period: 2003-2005 (M.Cane (PI), A.Kaplan (co-PI), and D.Chen (co-PI))

(NOAA) Dynamical forecasting of ENSO: Contribution to the IRI network (UCSIO P.O.10216264). Total: $252,000, period: 2002-2003 (M.Cane (PI), A.Kaplan (co-PI), and D.Chen).

(NOAA) Collaborative research: Objective interpretation of proxy data for multiproxy paleoclimate reconstructions (NA16GP1616). Total: $190,322, period: 2001-2003 (PI A.Kaplan with co-PIs M.Cane and B.Reichert; collaboration with M.Evans (U of AZ)).

(NOAA) Developing ocean models and data assimilation methods for IRI network. Total: $296,863, period: 2000-2002 (M.Cane (PI), A.Kaplan (co-PI), and D.Chen).

(NOAA-NASA) Application of remote sensing data to produce high resolution gridded analyses of historical climate observations (NA06GP0567). Total: $377,424, period: 2000-2003 (PI A.Kaplan with co-PIs M.Cane, Y.Kushnir, D.Witter)

(NOAA-NSF/ESH) Methodology and application of objective analysis climate field reconstruction from proxy data (NA86GP0437). Total: $374,821, period: 1998-2002 (M.Cane (PI), A.Kaplan (co-PI), and M.Evans)

(NOAA) Dynamical forecasting of ENSO (NA86GP0515). Total: $1,393,428, period: 1998-2002 (M.Cane (PI), D.Chen (co-PI), and A.Kaplan (co-PI))