Earth & Space Research
A Nonprofit Research Institute

Climate Research in the Space Age

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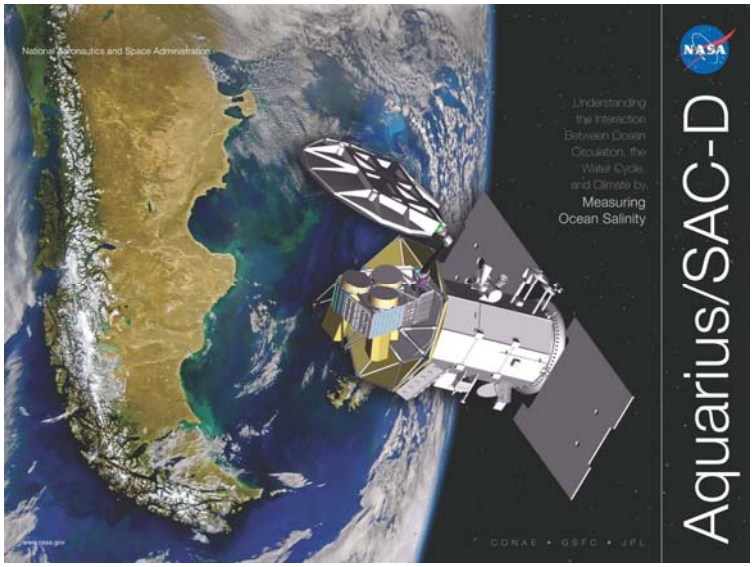
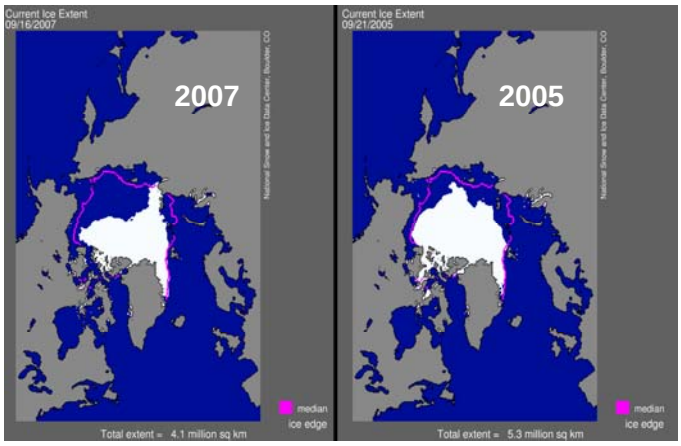
Summary

Climate change and global warming are very much in the news these days. In 2007, the 4th Intergovernmental Panel on Climate Change (IPCC) reported that the "*Warming of the climate system is unequivocal….*" Earth observing satellite measurements provide some of the most important information to study how the climate is changing. Polar ice caps, sea level rise, surface and air temperatures, ocean currents, global rainfall, tropical storm intensity and several other indicators are being monitored today with satellite data. Much of this information is also used to study climate events such as El Niño and to improve hurricane forecasting. This presentation provides some specific examples from satellite missions in our nation's space program, and shows how they are providing new information about our climate that has never been available before. New advances are on the horizon as well; exploratory satellites that will measure, for example, greenhouse gasses, ocean salinity and soil moisture. In the decades ahead, there is a bright future for talented young scientists and engineers in the space program for studying our home planet.





Dr. Gary Lagerloef is a professional oceanographer and climate scientist who has lived and worked in the Seattle area for over 30 years. A PhD graduate of the University of Washington, he has worked for NOAA, NASA and in the private sector. He is a co-founder and President of Earth & Space Research, a non-profit scientific research institution in Seattle, WA. He is presently sponsored by NASA to lead the development of an international climate research satellite mission, *Aquarius*, to study the links between ocean circulation, global water cycle and climate by measuring ocean salinity variations from space (launching in May 2010).

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Satellite Programs & Climate Change
Resources and Links

Science Resources

- NASA's View of Earth: http://www.nasa.gov/externalflash/earthday_gallery/index_noaccess.html
- JPL/NASA video presentation, Climate Day 2008 – Hot Topic Earth http://www.jpl.nasa.gov/videos/earth/climate/
- JPL/NASA Earth Science Website: http://www.jpl.nasa.gov/earth/
- JPL/NASA Sea Level Website: http://sealevel.jpl.nasa.gov/
- ESR's Climate Change Website: http://www.esr.org/outreach/climate_change/climate_index.html
- ESR's *Aquarius Mission* Website: http://www.esr.org/aquarius.html
- ESR's Satellite-derived Ocean Currents Website: http://www.oscar.noaa.gov/
- National Snow and Ice Data Center: http://nsidc.org/
- University of Washington Climate Impacts Group: http://cses.washington.edu/cig/
- Gateway to the UN System's Work on Climate Change: http://www.un.org/climatechange/
- Intergovernmental Panel on Climate Change: http://www.ipcc.ch
- Nature Magazine reports on Climate Change: http://www.nature.com/climate/index.html
- Ocean Acidification: http://www.pmel.noaa.gov/co2/co2-home.html
- Real Climate: http://www.realclimate.org/
- ESR's Polar Photo Gallery: http://www.esr.org/esrphotos.html

Pacific Northwest Regional Resources for Climate Change

- Climate Solutions: http://www.climatesolutions.org/
- Puget Sound Energy Green Power Program: http://www.pse.com/solutions/foryourhome/Pages/home_greenPower.aspx
- Seattle City Light Climate Action Website: http://www.seattle.gov/light/climatechange/

WHAT can YOU do?

Top 10 personal Solutions from the Union of Concerned Scientists:
http://www.ucsusa.org/global_warming/solutions/ten-personal-solutions.html

Natural Resource Defense Council's "How to Fight Global Warming":
http://www.nrdc.org/globalWarming/gsteps.asp

Kid's Boogaloo: "Do Something about Global Warming":
http://www.alligatorboogaloo.com/kids/features/globey/index.html