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# Reanalyses

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Michael Bosilovich (NASA GSFC)  
with significant contributions from  
others

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# WCRP 4th International Conference on Reanalysis

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- See report to last WDAC for some details
  - The full conference report at [icr4.org](http://icr4.org), available
  - A brief summary is accepted to BAMS
  - ICR4 was initiated through WOAP and oversight continues through WDAC
  - Next conference should be within 4-5 years, or 2016-2017 (with about 2 years lead up)
  - Input Observations collaborations and organization - forthcoming workshop
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# Technical Developers Workshop

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- A pilot workshop held at GSFC in Mar 2010 yielded interesting discussions and sharing of ideas and results pertaining to the inner workings of reanalysis systems (also initiated the reanalysis.org effort lead by Gil Compo)
  - Another idea raised here: Coordinated experimentation among the atmospheric reanalyses centers directed at significant systematic issues in reanalyses (such as satellite data transitions)
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# JRA-55 Family



JMA

Global Atmospheric Reanalysis

## JRA-55

1958-2012 (55years)

Full use of satellite data

To be continued  
as new JCDAS in  
real time basis  
(JRA-55 version)

MRI/JMA

In-situ data only  
JRA-55C

1972-2012

With no observational data

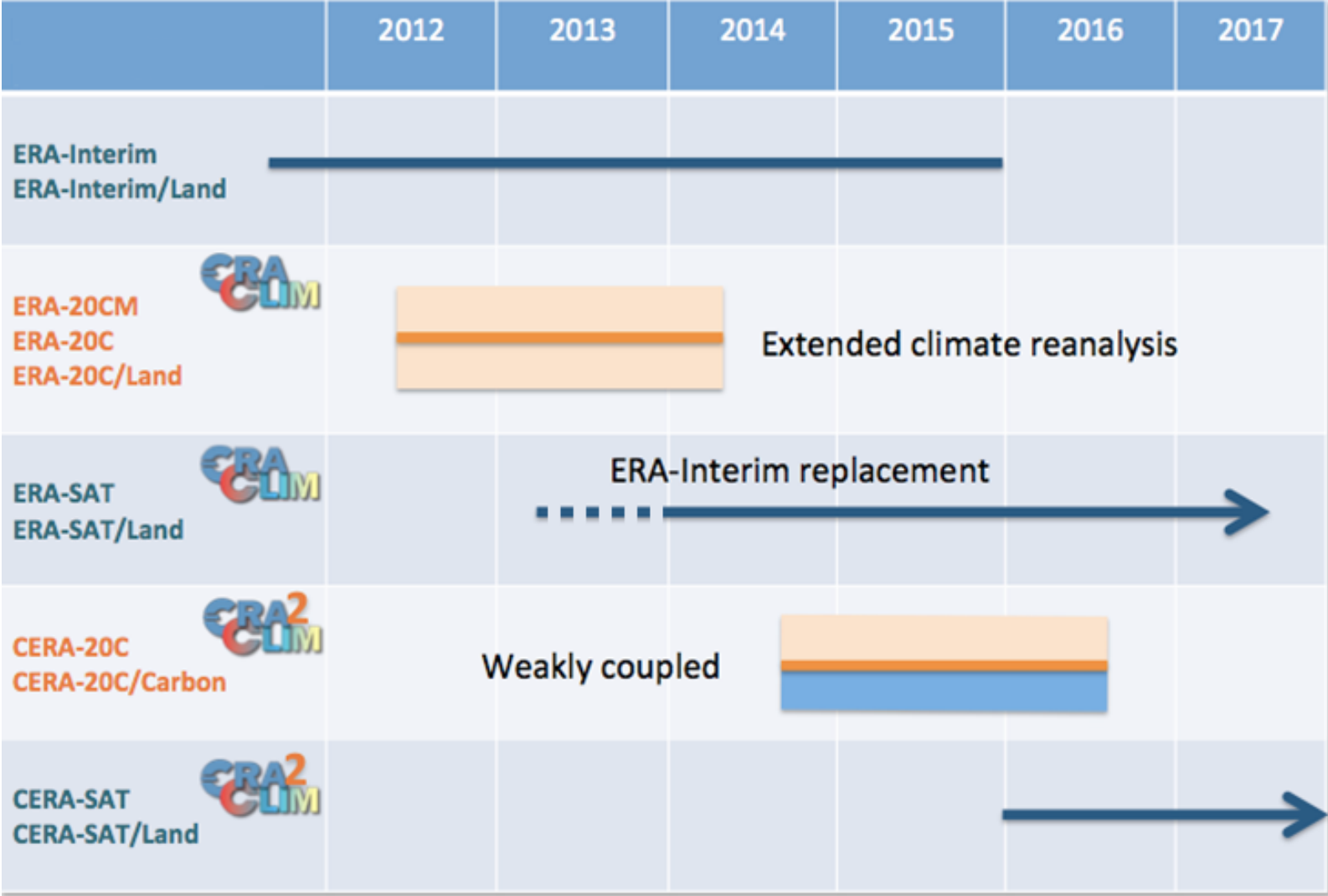
## JRA-55AMIP

1958-2012

Sub-products of JRA-55

JRA-55 satellite data reanalysis status - 90% complete as of Feb 2013 and should be available in the autumn

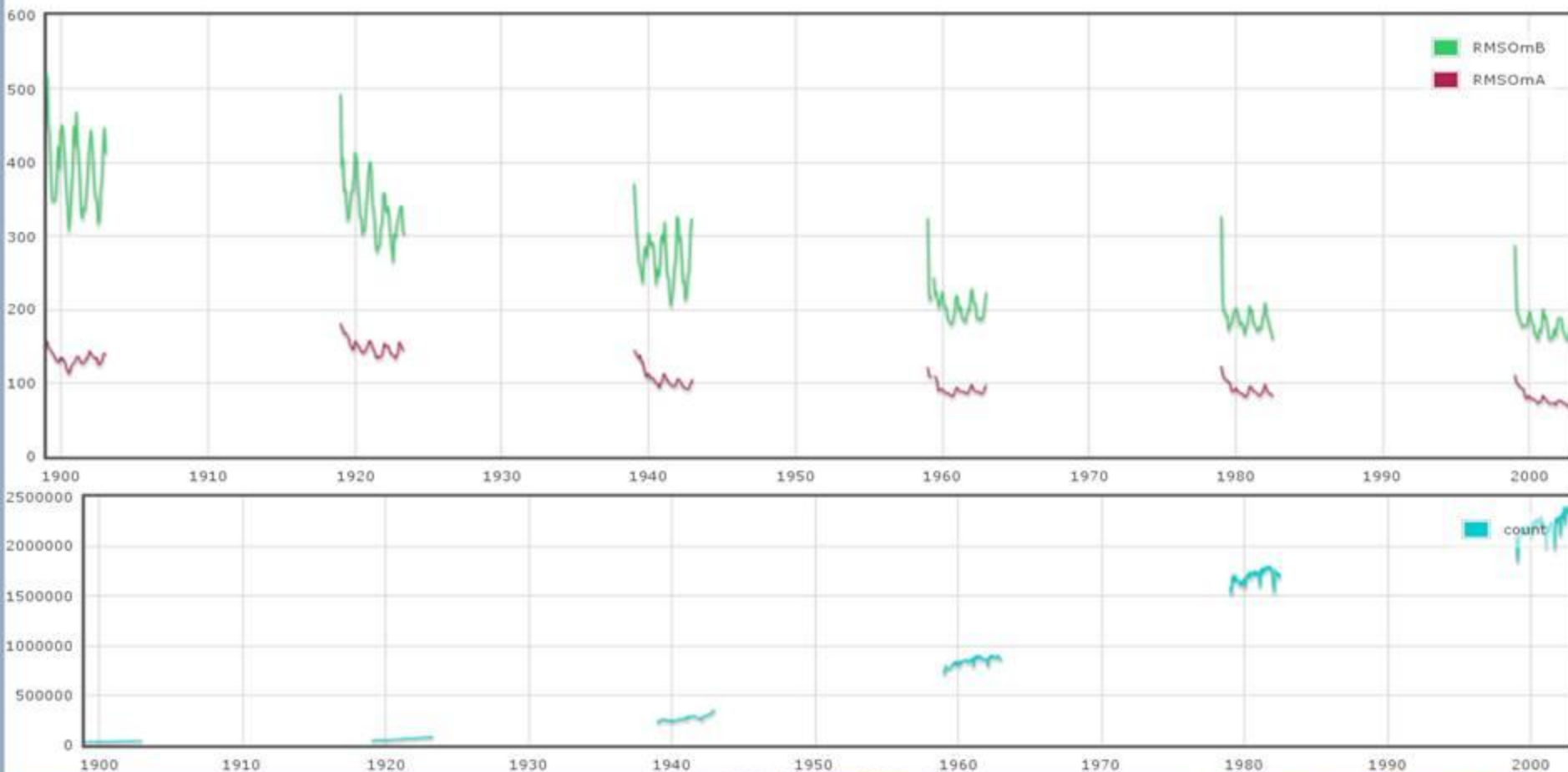
# Production plans



# ERA-20C status: 6 // streams spanning 20<sup>th</sup> century

## Surface pressure innovation statistics and data count for each stream

e2 enda PS(unit:Pa) Used



# NCEP Reanalyses

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Arun Kumar is the overall PI of a team effort of NCEP, ESRL & CIRES, and NCDC

*Stream 0: Boundary-forced*, 1850-present “AMIP” simulation with large ensemble

*Stream 1: Historical*, 1850-present using only surface data

*Stream 2: Modern*, 1946-present using only surface and conventional upper air data

*Stream 3: Satellite*, 1973-present using quality-controlled satellites, Global Positioning System Radio Occultation, and surface and conventional upper air data.

Based on NCEP GFS model and Hybrid Ensemble Kalman Filter.

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# GMAO Reanalysis Plans

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- High resolution experiment - Quarter degree, Cube sphere, 2010-2011, latest forward processing system, adding MLS and Aerosols
  - MERRA2 - follow on to MERRA, same res, latest model and analysis, beginning soon
    - Intended to test data issues: AMSU-A window channels, aircraft bias corrections
    - Land assimilation coupling effort
    - Essentially an intermediate system, leading to a new integrated reanalysis ~2016
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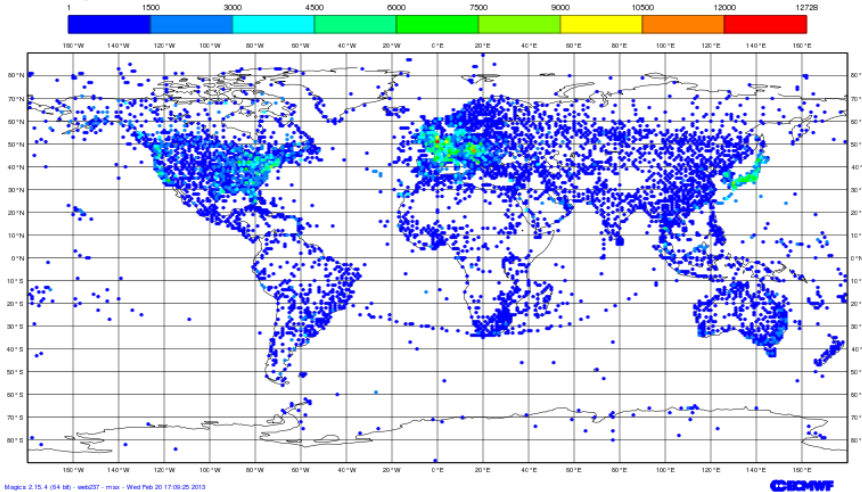


# Assimilated Observations

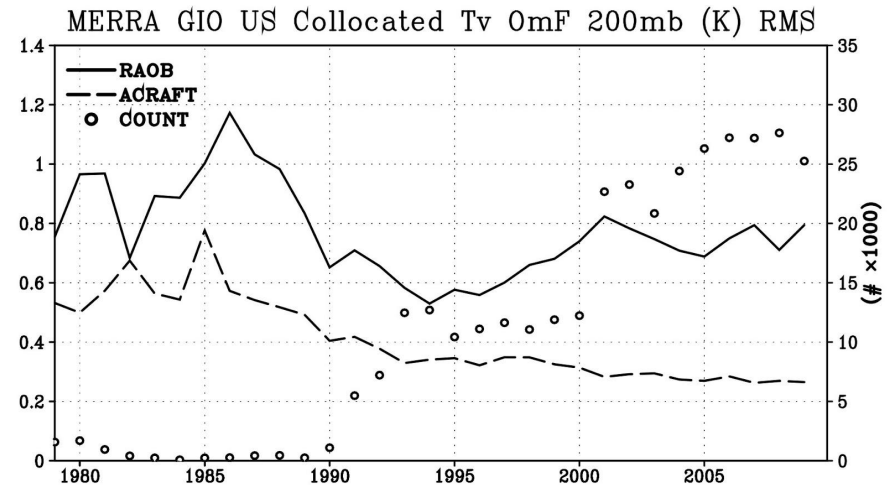
OdbDatabase: data517.odb  
Min: 1 Max: 12728 (5587 points)

Atmospheric model, Manual Land SYNOP, 1607, ispd, 17, Surface pressure, all,  
2005-07-01...2005-08-01, ISPDv2.2, ODB feedback, ERA-CLIM pilot reanalysis of the 20th-century using  
surface observations only

Colouring: Data count



MERRA observations and innovations are binned to the reanalysis grid. 30 years, 6 hourly data available



Both ECMWF and GMAO are developing access to assimilated observations as well as forecast error and analysis error

# Reanalyses Climate Applications

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- Reanalysis results contributing to:
    - IPCC: Report Ch2; Ana4Mips
    - State of the Climate report
    - Various decision making activities (wind energy and construction engineering)
  - While significant progress attained in recent years, uncertainties remain in the present products
  - Emphasizes the importance of conveying information about reanalyses to the community
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# Quantity/Quality of Reanalyses

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- Some have expressed concern over the the number of reanalysis products
  - The "family" of reanalyses approach will yield understanding of the models and observations, and further increase the number of systems
  - How to initiate a coordinated assessment of reanalyses?
    - **Ana4MIPS and Obs4Mips** could provide a platform
    - Not organized by developers, but include their input
    - Reanalysis.org provides a community forum
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# Reanalysis Intercomparisons and Observations - reanalyses.org

- Community driven - registered users provide content, answer questions
- Several recent updates regarding input observations
- User contributions, not just questions, starting to emerge

Reanalysis Intercomparison and Observations

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Home > Observations > RAOBCORE/RICH Visualization

### RAOBCORE/RICH Visualization

Last edited by michael.bosilovich on Tue, 02/19/2013 - 13:08

## RAOBCORE and RICH *online* Viewers now available!

RAOBCORE => Radiosone Observation COrrrection using REanalyses  
RICH => Radiosonde Innovation Composite Homogenization

New visualization utility for RAOBCORE and RICH adjusted global radiosonde dataset now available:

### RAOBCORE/RICH Version 1.5.1

<http://srvx7.img.univie.ac.at/~leo/richvis/newindex.html>

New visualization utility for **RAOBCORE 2.0** global radiosonde dataset now

# Reporting on Reanalyses

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- Is there a need for delineation of reanalysis activity reporting?
  - Example: Ocean reanalyses may be broadly covered by GSOP, while land reanalyses (or LDAS) may be covered by GLASS
  - Are these considered under reanalyses, or with their parent panels (CLIVAR and GEWEX)?
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