

# ClimateDataGuide.ucar.edu

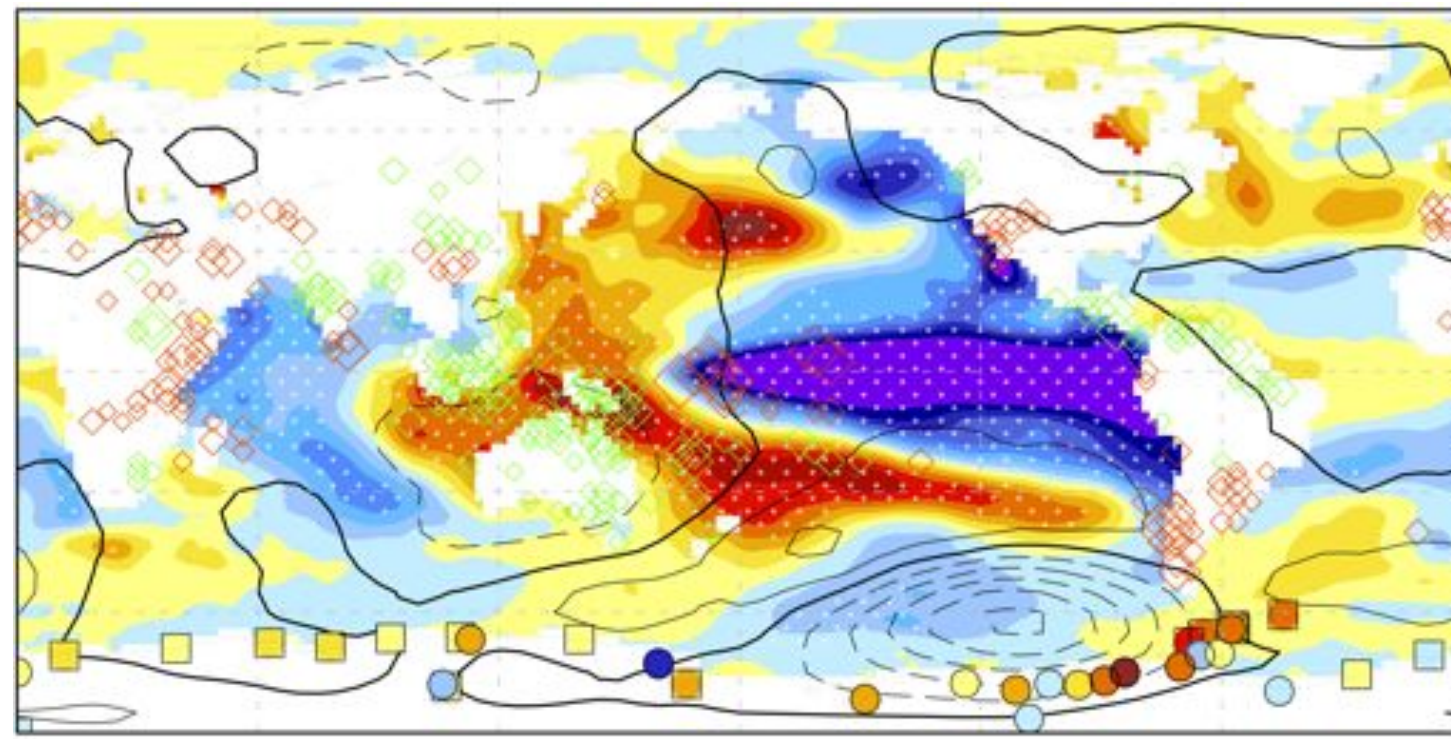
*an informed guide to climate data sets featuring community generated expert guidance*

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## Introduction

### Community Generated Expert Guidance

A growing community resource established in 2011, [climatedataguide.ucar.edu](http://climatedataguide.ucar.edu) is an interactive website that enables researchers and students to identify and make effective use of climate data sets by providing a focal point for **expert-user guidance**, discussion, and questions on the **strengths** and **limitations** of selected observational data sets and their applicability to model evaluations.



## Contribute

Have you published a data set or are you a knowledgeable user of particular data set? Please participate in the Climate Data Guide! We are looking to establish pages about data sets which meet the following criteria:

- Described in peer-reviewed literature
- Publicly available or available to researchers upon request
- Applicable to model evaluations
- Regional to global in scale
- Climatology or sufficient record length for climate change and climate variability studies
- Related to any component of the Earth System

Posts describing intercomparisons of variables among multiple data sets are welcome. We are also seeking posts on the nuts-and-bolts of data processing and on issues related to model evaluation.

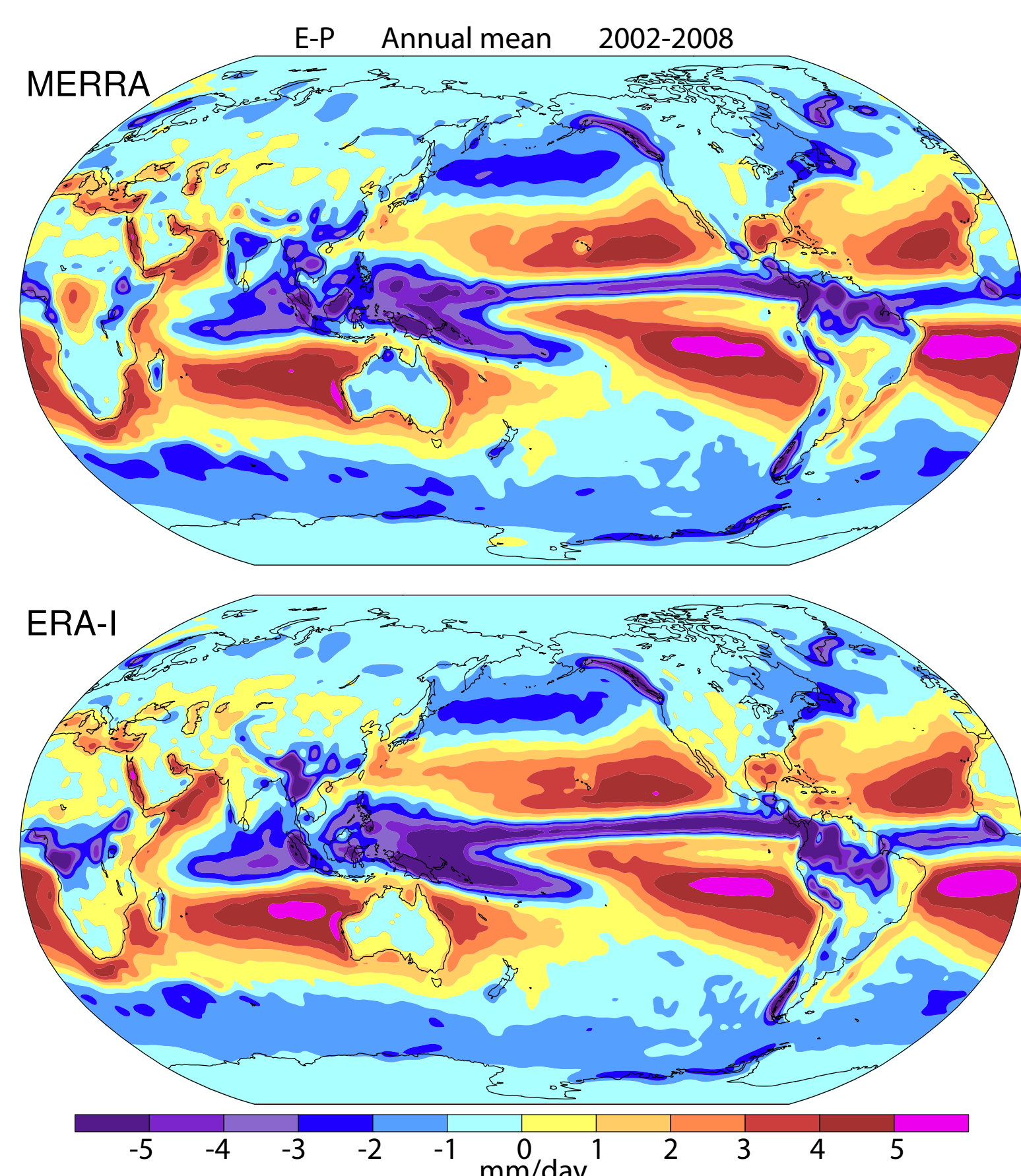
## Discuss

The Climate Data Guide is a modern, scalable website based on the popular Drupal platform. As such, users may interact with the site and with each other. For example, you may:

- Register for the site by supplying your email address and a few details about yourself
- Post comments or questions to most of the pages as part of the discussion of the data sets
- Create your own pages highlighting your expertise in various data sets
- Post links to news and recent papers of relevance to data set assessment or to model evaluation
- Participate in the “Which Data Set?” forum

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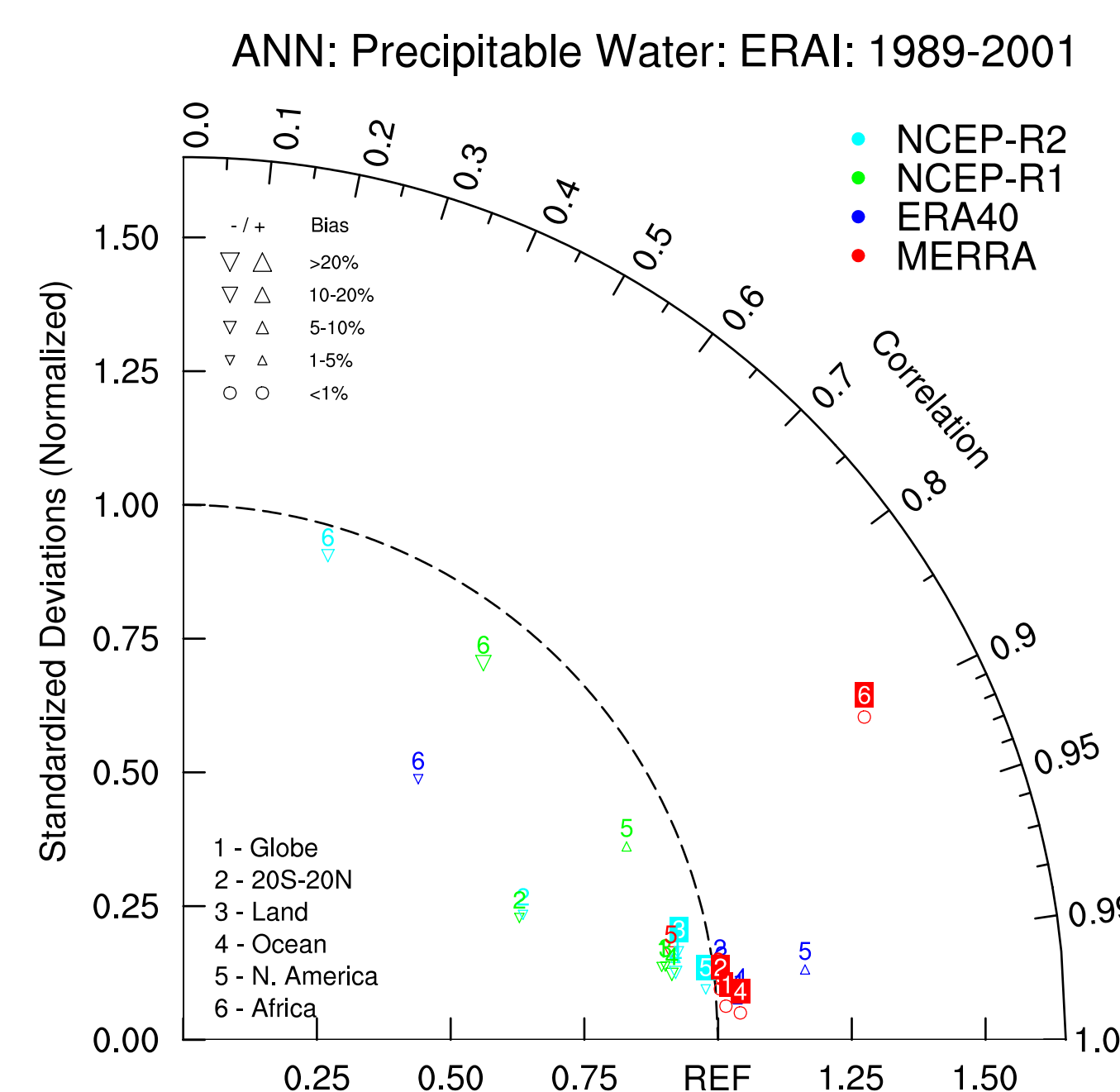
## Atmospheric Reanalysis



The above figure illustrates evaporation minus precipitation (E-P) estimated by the moisture budget method for MERRA and ERA-Interim. Although there is good broad-scale agreement, note that the estimates over parts of Africa and Australia are of different sign. From Trenberth et al., 2011: J. Clim. v24 p2907.

At right is a Taylor Diagram comparing precipitable water in various domains among several reanalyses. ERA-Interim is used as the reference data set. Figure by Dennis Shea.

Due to their ubiquity and popularity, the Climate Data Guide will feature several pages on atmospheric reanalyses. Atmospheric reanalyses use a dynamically consistent model framework and data assimilation scheme to provide an estimate of the atmospheric state at each time step. Yet each reanalysis system takes a somewhat different approach to data assimilation and makes different choices about which observations to include and how to correct for biases in the observations and the model. Third-generation reanalyses--NASA-MERRA, ERA-Interim, and NCEP-CSFR--are generally considered to be much improved over their predecessors. However, these products have not yet been fully evaluated, and initial studies suggest that there are still a number of problems owing in large part to the changing mix of assimilated observations.



## ICOADS

*Highlights from an entry on the website:*

The International Comprehensive Ocean-Atmosphere Data Set is the most comprehensive archive of global marine surface climate observations available. Variables include SST, SLP, wind speed, cloud amount, and others. There is no processing beyond initial quality control...

### Key Strengths

- Very long timeseries of several variables available in several locations
- Provides “ground truth” of the original measurements from which other, interpolated projects are derived (e.g. NOAA ERSST)
- Statistics such as standard deviations and number of observations are provided along with monthly means

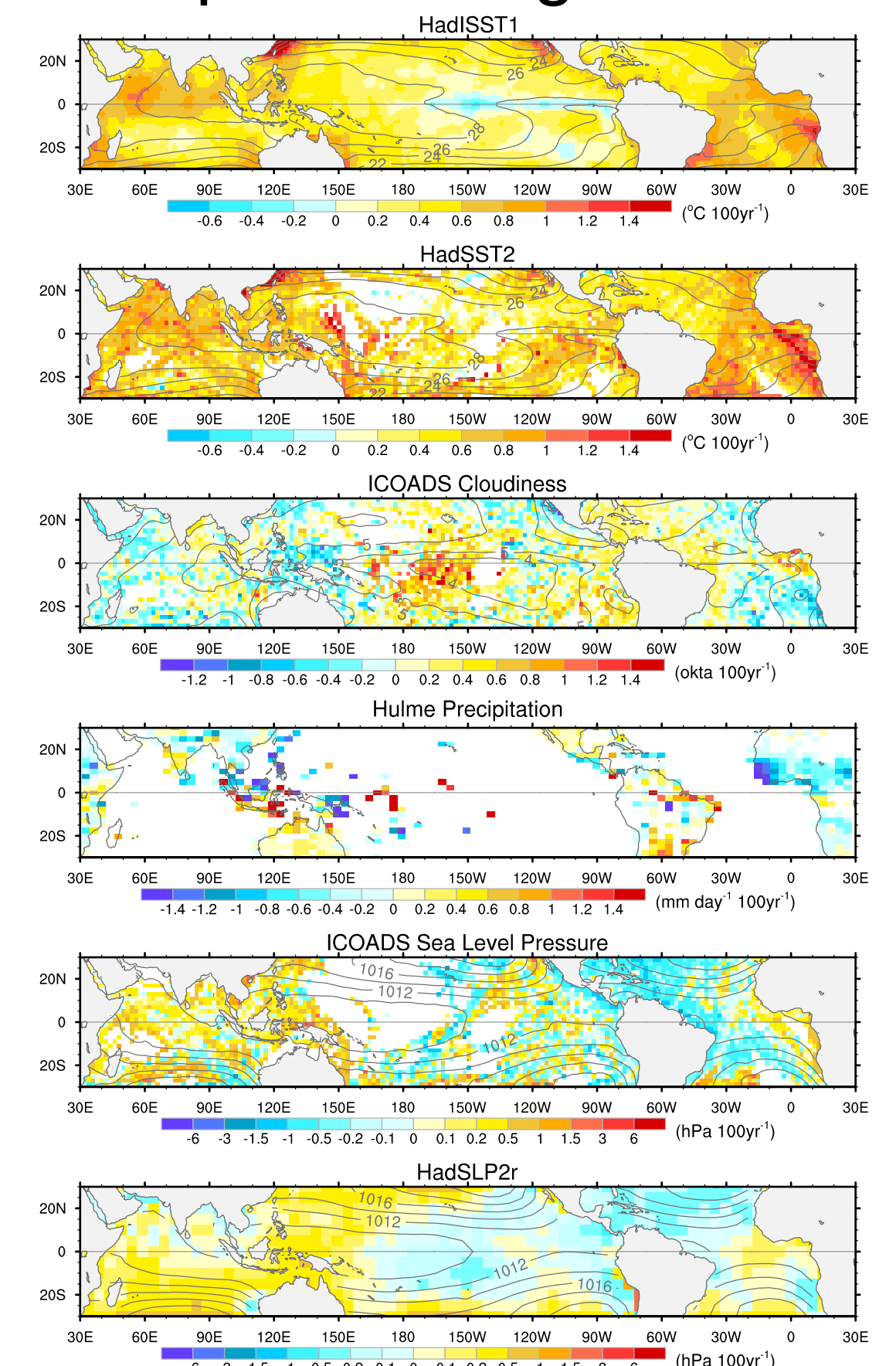
### Key Weaknesses

- No corrections (e.g. to account for changes in observing practices or instrumentation) are provided
- Data coverage is sparse, and creating comprehensible maps of a given variable can take patience

### Expert User Guidance

“ICOADS is the most extensive and widely used digital collection of quality-controlled surface weather observations available for the world oceans for studies of marine climate and its variability...Aggregating the data over many months and/or years and judicious use of smoothing and/or interpolating in space, can dramatically enhance the large-scale coherency of anomaly patterns by reducing noise...Because ICOADS contains many climatic variables which are measured independently but are physically related, evaluating the data for physical consistency provides a powerful tool for assessing the reliability of climatic signals...” (Clara Deser, NCAR)

Example of using ICOADS:



Twentieth Century tropical climate trends from a variety of sources, including ICOADS. Source: Deser et al., 2010, Geophys. Res. Lett. doi:10.1029/2010GL043321

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## Synergies

- **Climate Data Records:** We would welcome developers of Climate Data Records to establish pages or parts of pages on the website. This will be a centralized location to advertise and discuss your product(s)! Increased citations!
- **Observational assessments:** This project will contribute to the research underlying the **IPCC-AR5** assessment of climate change and to **GEWEX**'s production of reference global water and energy budget products
- **CMIP5:** The Climate Data Guide will be an excellent source to consult as you evaluate the growing number of available model simulations
- **Everyday research:** Most of all, this is a resource to facilitate your everyday climate research. With the proliferation of data sets on a given variable, there is a need for a one-stop-shop for guidance on data set strengths and weaknesses. This will save you time and potentially the embarrassment of publishing results based on suspect data!

## What you can do now

- Visit our site online: <http://climatedataguide.ucar.edu>
- Become a registered user of the site
- Contribute. We want your expertise, not your money!
- Provide feedback via the form on the site