

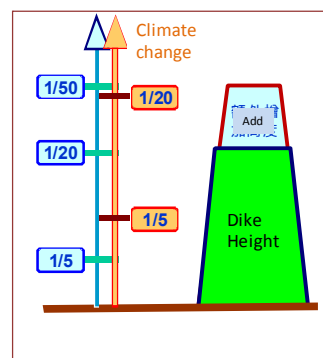
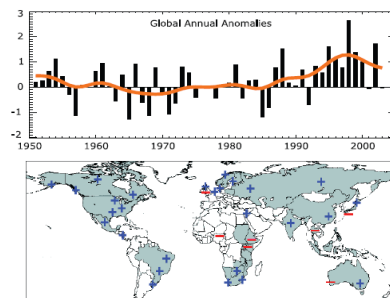
# ICCLAS inputs for the new IAHS Scientific Initiative

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## Background

- Climate and land use change is complicating current and future water management challenges by adding hydrological **variability and uncertainty** to decision making processes.



## Background

- **Limitations** of traditional hydrological analyses and model approaches based on concepts of **stationary** hydrological events need to be understood and alternative methods need to be explored to deal with environmental change.

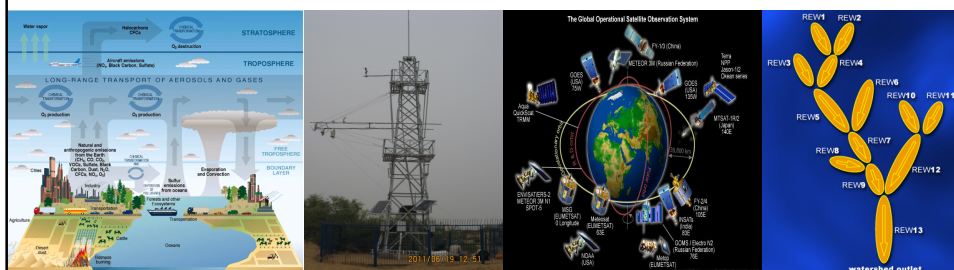


An uncertain future challenges water planners.

Milly, 2008

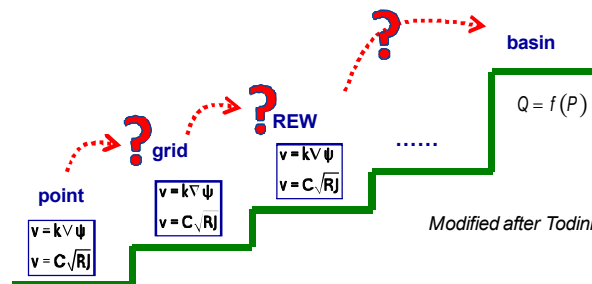
## For this purpose...

- **Experimental and modeling** studies should be encouraged to address the sensitivity of hydrological and hydrometeorological fluxes of the coupled land-atmosphere system to climate and land use change at local, regional and global scales.



## Should include studies addressing...

- a) To evaluate and develop methods to represent temporal and/or spatial land surface processes for hydrological assessment



## Should include studies addressing...

- b) To utilize multi-variable and/or multi-scale data (e.g., land surface fluxes, remote sensing, stream flow, groundwater) to improve and evaluate hydrological or hydrometeorological predictions.
- Evaluations and use of weather prediction data and measured data provided by global databases, such as GEWEX and FluxNet, should also be encouraged.

## Elements

1. New methods to improve evapotranspiration predictions
2. Improve predictions of climate and land use change impacts on evapotranspiration and **extreme hydrological predictions**
3. Employ spatial data and new techniques to represent and evaluate impacts of spatial **heterogeneity** on land surface fluxes and hydrological predictions
4. Employ multi-variable data to assess and evaluate the utility of land-atmosphere process formulations in hydrological modeling
5. Evaluate hydrological sensitivity and impacts of climate and land use scenarios, including use of weather prediction forecast data and land use strategies.