



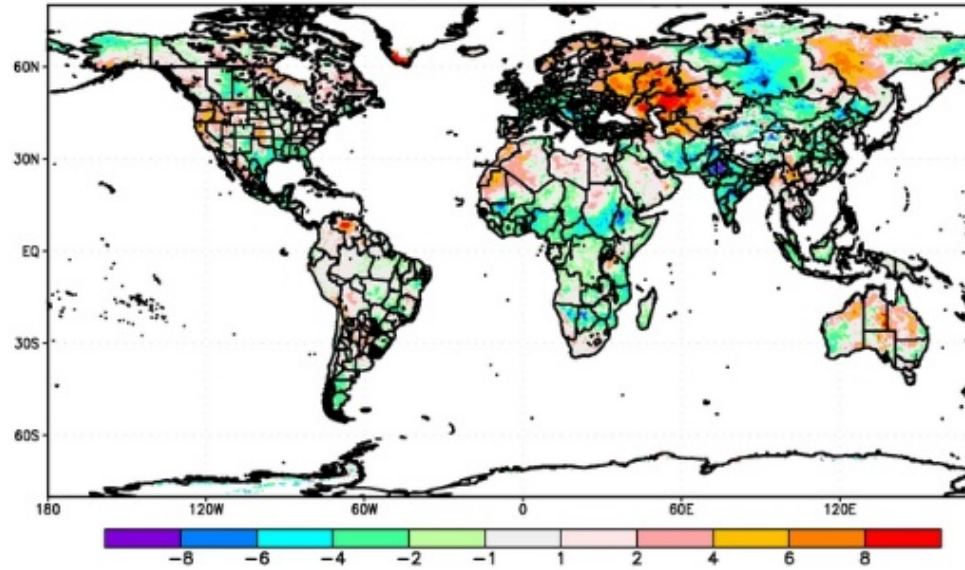
Presentation on Satellite Observations that Monitor Surface Wetness and the Mekong River Flow

Using the
Special Sensor Microwave Imager (SSM/I)

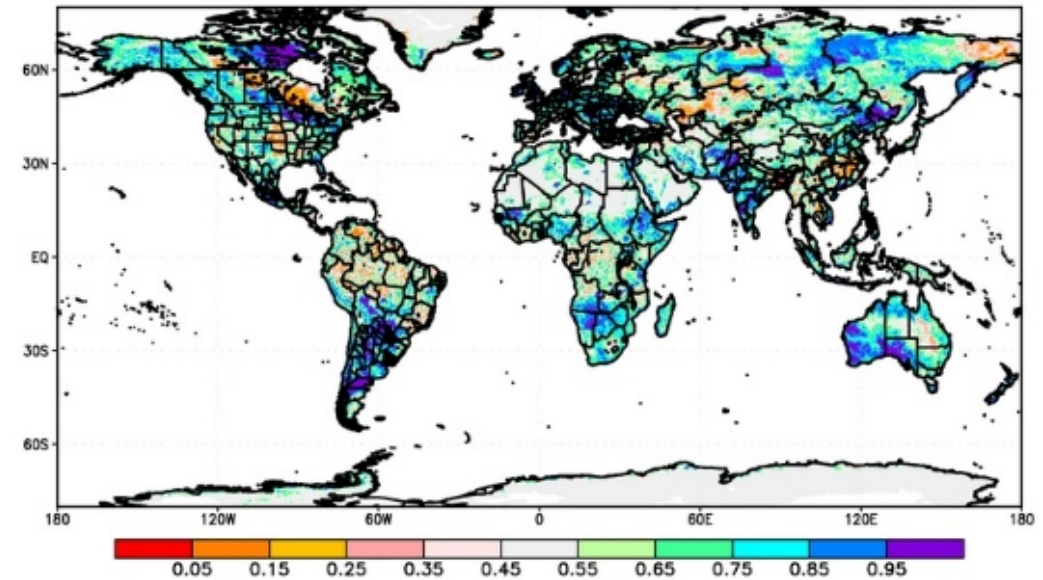
Alan Basist
Eyes On Earth
December, 2019



SATELLITE DERIVED SURFACE ADJ TEMPERATURE ANOMALIES – GLOBAL
ANOMALIES (DEGREES C) FOR MAY, 2014
BASE PERIOD 1988 – 2010



SATELLITE DERIVED SURFACE WETNESS ANOMALIES – GLOBAL
STANDARDIZED ANOMALIES FOR MAY, 2014
BASE PERIOD 1988 – 2010

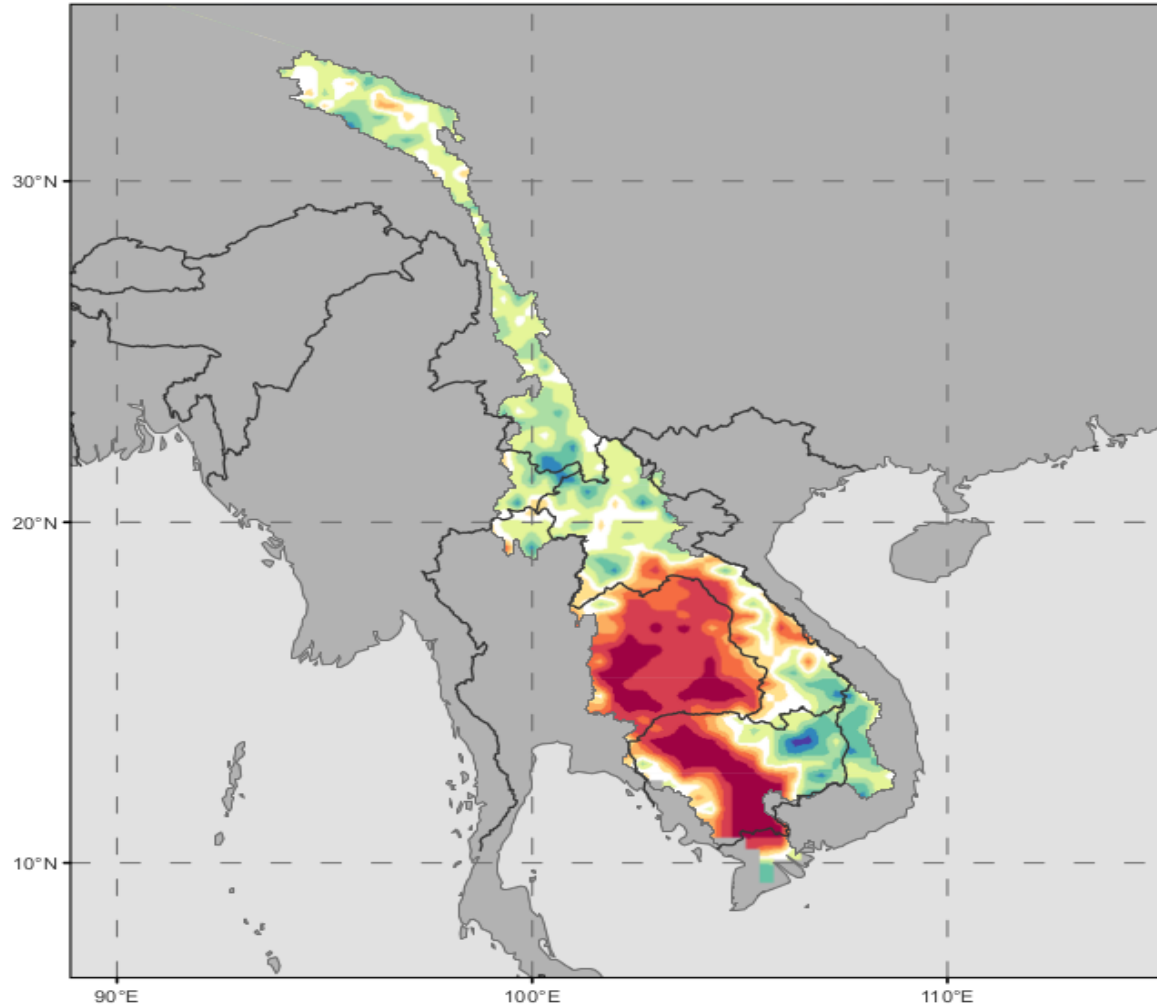


Monitoring River Flow and Surface Wetness

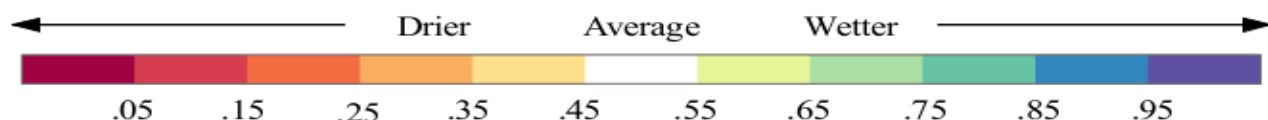
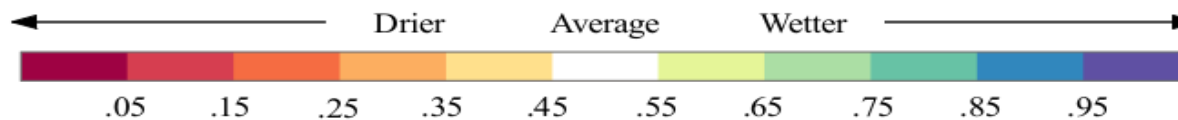
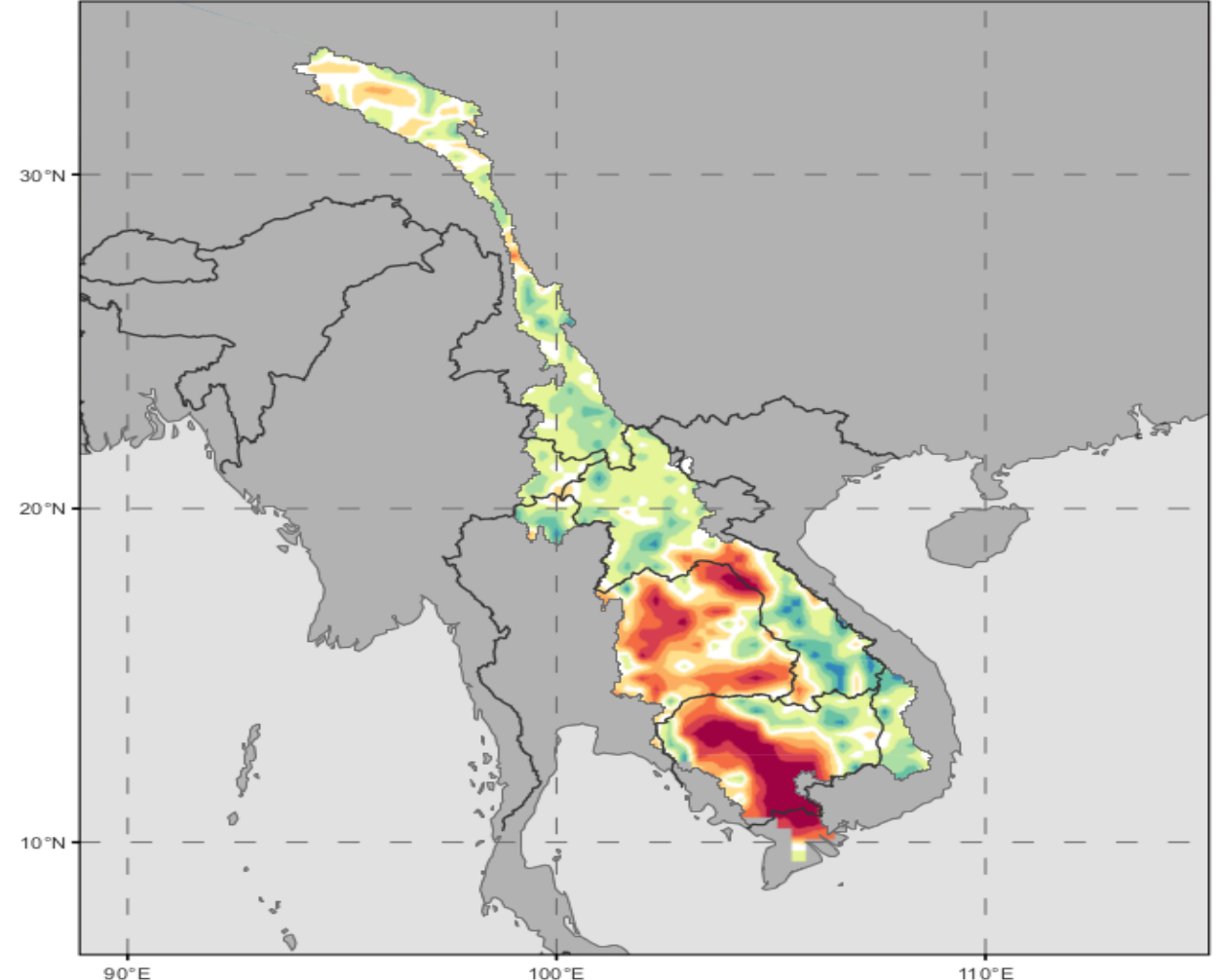
- Developed simple river flow model from 1992 to 2019
- The study focused on the upper Mekong basin
- Simple one variable model was able to identify natural flow with 89% accuracy
- Identify the relationship between natural flow and the amount of water released from dams in China
- Identify the capacity of the satellite derived wetness index
- Performed case study during the rainy season of 2019
- August began with an extreme drought in the lower basin
- Within four weeks the surface wetness showed a rapid transition to extreme flood in parts of the basin

Surface Wetness Anomalies (Deviation from Normal) for the Mekong Basin

Average for August 18- 24, 2019

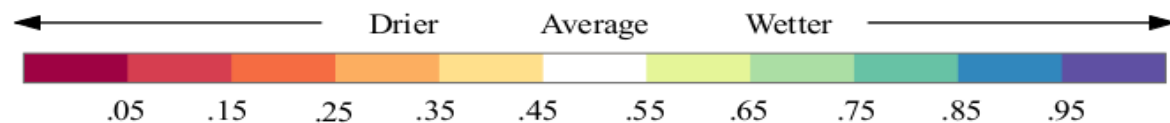
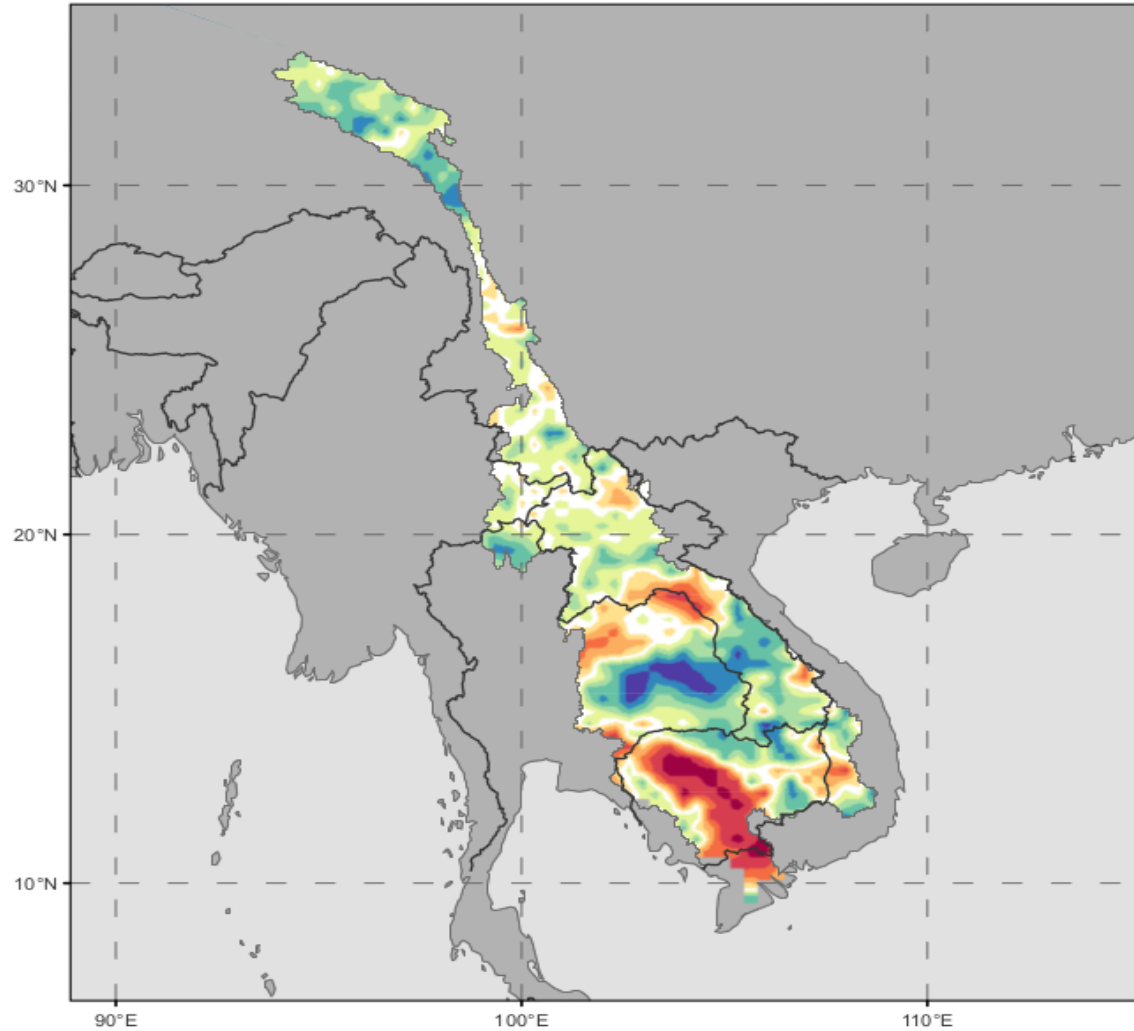


Average for August 25- 31, 2019

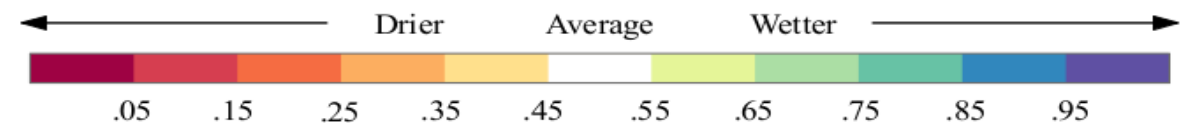
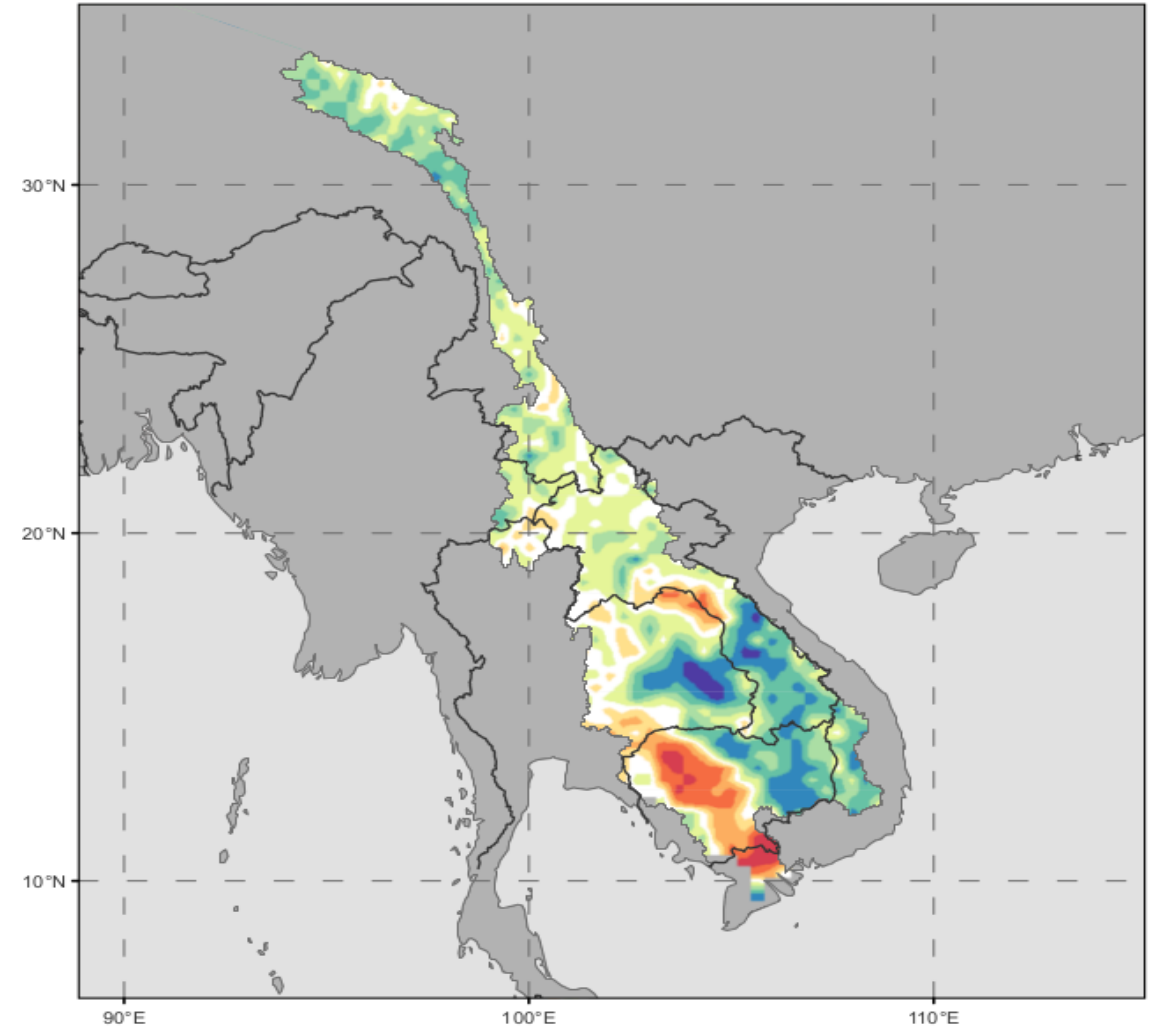


Surface Wetness Anomalies (Deviation from Normal) for the Mekong Basin

Average for September 1 - 7, 2019



Average for September 8- 14, 2019



The section of the upper Mekong is striped



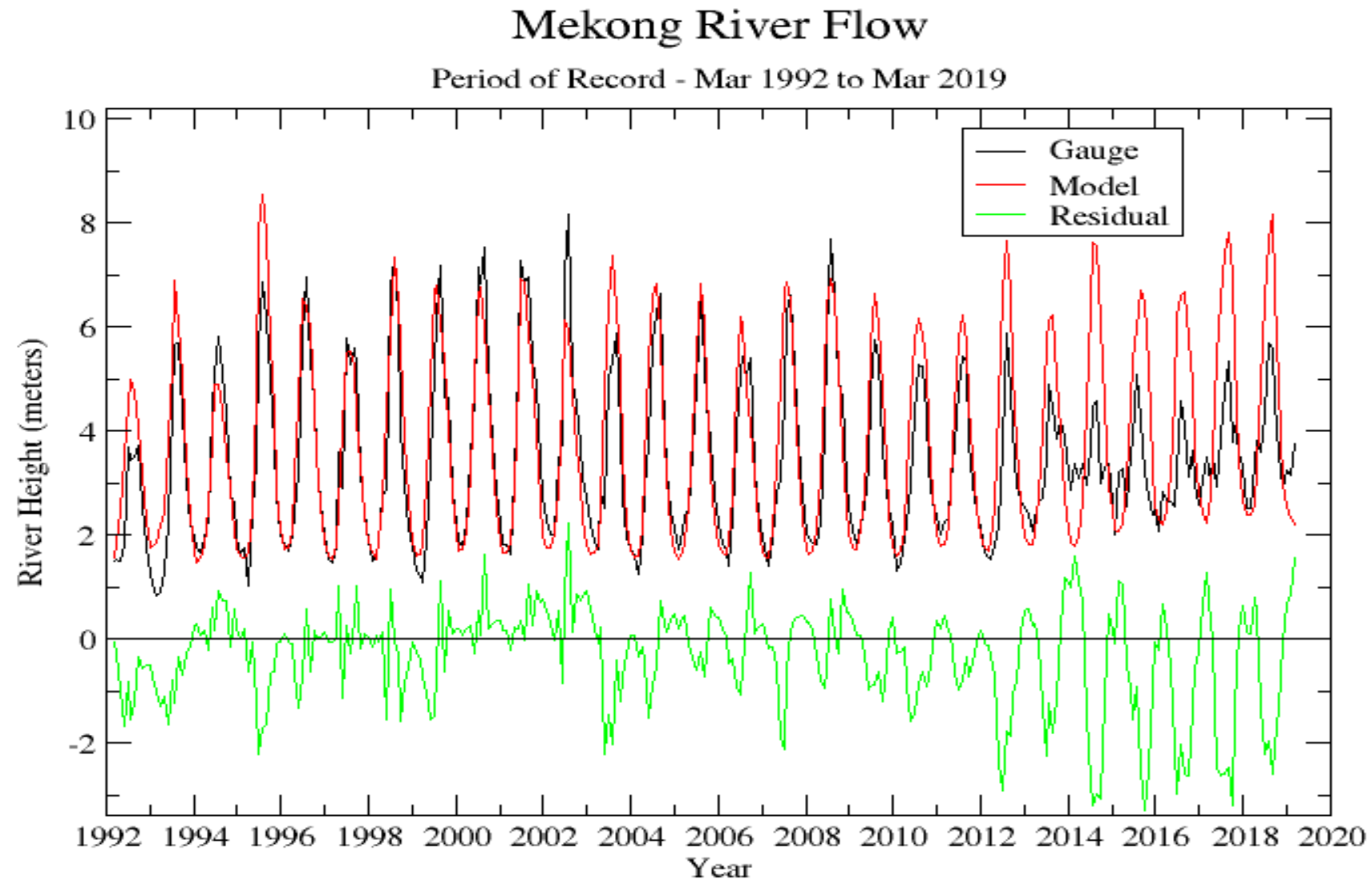
Dams and Electrical Generation on Upper Mekong



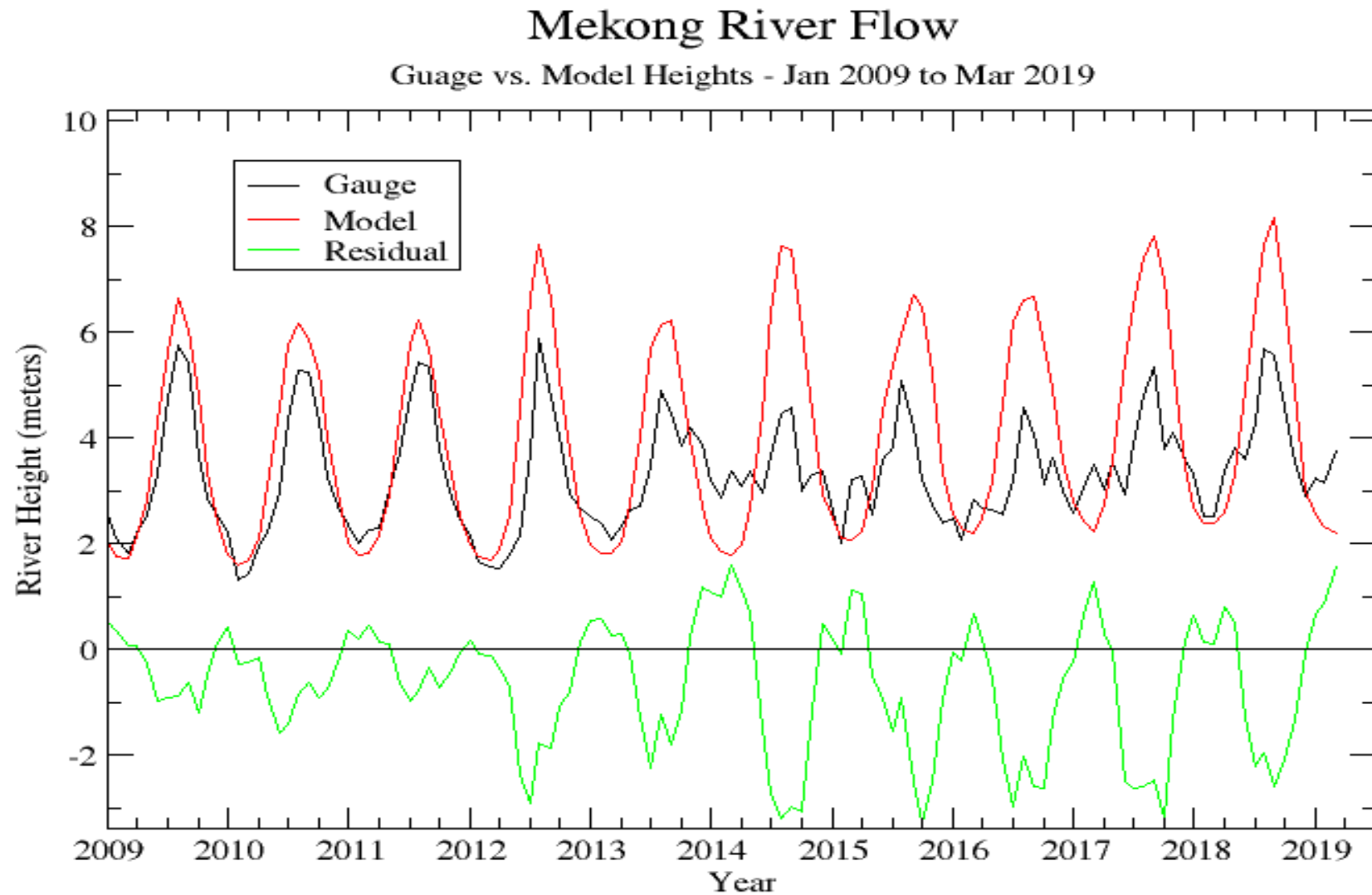
Source: MRC Strategic Environmental Assessment: ICEM, 2010

*Initially proposed as a 3,300 MW project, 465 MW and 2,600 MW options have also been studied.

Measured and Predicted Flow at Chian Saen



Enlarged Measured and Predicted Flow on Upper Mekong



Results of the two studies based on the Wetness Index

- Is a simple effective tool to monitor river discharge with 89% accuracy
- Model identifies the amount of natural flow in the upper basin
- Detects the quantity of water held in the reservoirs upstream
- Offers transparency of water resources shared between riparian nations
- Provides valuable lead time of water originating upstream
- Anomalies provide near real time monitoring of surface wetness conditions throughout Mekong basin
- Monitoring is central to planning and cooperation in water resource management.
- Can effectively mitigate the impact of flood and drought
- Can easily be applied to all the tributaries of the Mekong River