Discovery of Luni-Geo-Solar Signals in Satellite Products of Earth's Winds

Please read our MoonClimate ForeNote prior to continuing to this document

The following is a list of compiled information, scientific publications, and unpublished research documents to regroup the communities working with climate models and those using satellite data. The objective is to reduce inconsistencies between model simulations and satellite measurements in order to improve the predictions of weather and climate events (i.e., El Niño , Monsoons, Cyclones, Floods).

Outline
2007: Improving series of El Niño forecasts using satellite products of winds and sea level
2008: Finding large scale sea level errors when climate models and satellite products of winds are used without appropriate consideration of their oceanic content
2009: Preliminary solutions proposed to reduce the errors
2011: Evidence of Earth-Moon-Sun Alignments influencing Tropical Climate Events
2012: Scatterometric Vectors and Monitoring of the Oceans with Models of Weather, Waves, Tides, and Climate
2013: Conclusion and Invitation to join the MoonClimate group

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2007

Bridging the Gap between Weather and Climate Predictions with Satellite Data

Click here for pdf document

The **NASA** panel of peer-scientists reviewing this proposal wrote:

"The issues addressed in this proposal are of significant importance to climate," particularly "the interhemispheric difference in sea level in the Pacific and Indian Oceans" (See Figure 5 of document). *"The Panel feels the PI (Principal Investigator, author) has the right target", the proposed work to "explore the possibility that Tropical Instability Waves are caused by ocean tides"* did not get funded at the time.
The next seven years of research continued to bring compelling evidence that gravitational attractions from the earth, moon, and sun constantly affect our climate and weather events in the tropics.

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2008

Improving Climate forecasts by implementing Weather Regime Occurrences in Ocean/Atmosphere Models

Click here for pdf document

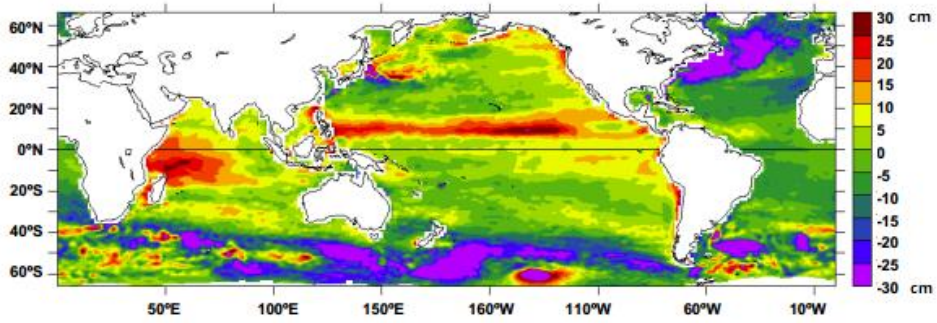
In our research, we use satellite data in forecasting El Niño events for two aspects that climate models cannot realistically simulate. Satellite QuikSCAT provides temporal information to trigger simulations of the sudden occurrence of wind bursts in our models while satellites with altimeters provide the large scale ongoing model adjustments over many years between the Indian and Pacific Oceans. An example of traditional forecasts and improved forecasts can be compared on page 9 of the document.

The above gave evidence to the following:

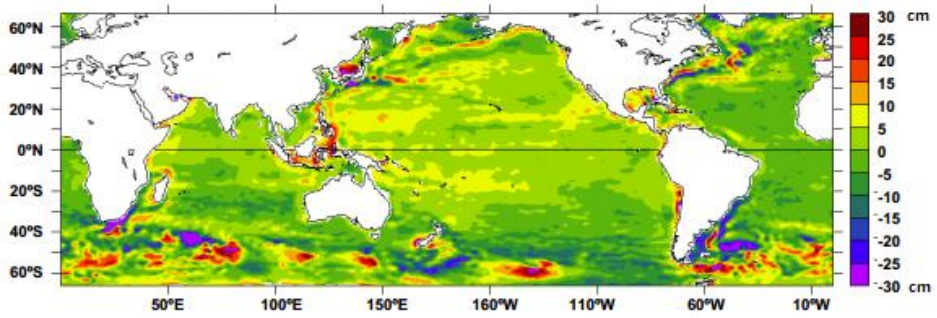
Inconsistencies between Climate Model assumptions and Satellite monitoring of Ocean Vector Winds (OVW)
Click here for pdf document

Sea Level Discrepancies between Simulations and Observations

(a) Sea Level Errors simulated with OVWs estimated from QSCAT



(b) Sea Level Errors simulated with OVWs provided by ECMWF



The Sea Levels are simulated by Ocean General Circulation Model (OGCM) experiments constrained by Ocean Vector Winds (OVW) estimated from (a) scatterometry measurements onboard satellite QSCAT. The observed Sea Levels are provided within 5cm accuracy by Archiving, Validation and Interpretation of Satellite Oceanographic data (AVISO). Map (a) demonstrates large errors reaching 15 cm in the tropical Pacific and Indian Oceans, Map (b) obtained with OVWs produced by European Center for Medium-range Weather Forecasts (ECMWF) has a reasonable margin of error. Using scatterometric vectors as a surface forcing of OGCMs as prepared in 2007 for the Working Group on Ocean Model Development (WGOMD) makes all OGCMs simulate large errors in the tropics similar to those in Map (a).

2009

Importance of the Earth-Moon system for reducing inconsistencies between Climate modeling and monitoring with Satellite Data

Click Here for Abstract

The full 39 page document is available for interested parties by either joining the MoonClimate group for discussions or emailing info@moonclimate.org

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2011

Earth-Moon-Sun Alignments influencing Tropical Climate Events

Cover Letter
Abstract of Main Text
Supplementary Guide

The full documents are available for interested parties by either joining the MoonClimate group for discussions or emailing info@moonclimate.org

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Sep 2012

Vecteurs diffusiométriques et suivi de l'Océan avec Modèles de Météo, Vagues, Marées et Climat (Scatterometric Vectors and Monitoring of the Oceans with Models of Weather, Waves, Tides, and Climate)

Click here for pdf document

The full document is available for interested parties by either joining the MoonClimate group for discussions or emailing info@moonclimate.org

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Nov 2012

Moments Cinétiques Hydro-Atmosphériques et Climat
(Oceanic, Atmospheric, Hydrospheric Angular Momenta and Climate)

Monitoring the values of Angular Momentum caused by Oceanic and Atmospheric Circulations as well as their Mass displacements is a powerful tool to detect possible errors occurring in General Circulation Model (GCM) simulations of climate states, as well as in satellite data processing or assimilation into GCMs. See an illustrative example of such error detection for the satellite products used in Estimating the Circulation and Climate of the Ocean (ECCO) by the Special Bureau for the Oceans (SBO) by clicking **here**. Ocean Angular Momentum (OAM) results like those obtained by the SBO after error removal are sent to Systèmes de Référence Temps-Espace (SYRTE) to which we refer for all our developments using satellite products and GCMs.

Updated documents are available for interested parties by either joining the MoonClimate group for discussions or emailing info@moonclimate.org

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Dec 2012

Moments Angulaires Océaniques Simulés avec Nucleus for European Modeling of the Ocean (NEMO)
(Ocean Angular Momenta Simulated with NEMO)

Using scatterometry in modeling as traditionally done with NCEP or ECMWF air-sea surface products creates large Sea Level errors in NEMO similar to 2008 Map (a). It also creates multi-year long series of Ocean Angular Momentum (OAM) that are inconsistent with what is known from all the OAM series analyzed in Systèmes de Référence Temps-Espace (SYRTE).

Updated documents are available for interested parties by either joining the MoonClimate group for discussions or emailing info@moonclimate.org

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Conclusion

It is important to become aware of the large permanent and seasonal errors simulated by using scatterometry satellite products in Ocean General Circulation Models as traditionally done with Ocean Vector Winds produced by Atmospheric Centers for the Working Group on Ocean Model Development (WGOMD). Indeed, by monitoring how the energy flows in the oceans between the surface winds and the bottom topography, scatterometry missions keep providing very useful information to the community in charge of improving estimations of how climate evolves with time.

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for further questions and information: info@moonclimate.org