Announcing the Final Examination of Shadi Aslebagh for the degree of Master of Science

Time & Location: November 28, 2012 at 10:30 AM in HEC 356
Title: Development of an Integrated Oceanic Rain Rate Product in Support of Sea Surface Salinity Measurements from Aquarius/SAC-D

Aquarius/SAC-D is a joint mission by National Aeronautics and Space Administration (NASA) and the Comision Nacional de Actividades Espaciales (CONAE), Argentine Space Agency. The satellite was launched in June 2011 and the prime remote sensing instrument is also named Aquarius (AQ). The main objective of this science program is to provide Sea Surface Salinity (SSS) maps of the global oceans every 7 days for understanding the Earth's hydrologic cycle and for assessing long-term global climate change.

The Aquarius instrument was built jointly by NASA's Goddard Space Flight Center and the Jet Propulsion Laboratory. It is an active/passive L-band remote sensor that measures ocean brightness temperature (Tb) and radar backscatter, and these quantities are used to infer sea surface salinity. Other environmental parameters (e.g., sea surface temperature, wind speed and rain) also affect the microwave emitted radiance or brightness temperature. The SSS geophysical retrieval algorithm considers all these environmental parameters and makes the Tb corrections before retrieving SSS. Instantaneous rainfall can cause increase roughness that raises the ocean surface Tb. Further short term rain accumulation (integrated rain rate) can produce a fresh water lens that dilutes the surface salinity.

This thesis presents results of a study to develop an integrated rain rate (IRR) product that may be valuable to remote sensing engineers and algorithm developers. The use of this IRR product, along with in situ ocean salinity measurements from buoys, may mitigate the effects of rain from the SSS retrieval.

Major: Electrical Engineering

Educational Career:
Bachelor's of Electrical Engineering, BS, 2005, Khaje Nasir Toosi University of Technology

Committee in Charge:
Prof. W. Linwood Jones, Chair, EECS
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Approved for distribution by Prof. W. Linwood Jones, Committee Chair, on October 4, 2012.

The public is welcome to attend.