

**Séminaire mardi le 27 août 2019 11:00 / Seminar Tuesday August 27<sup>th</sup> 2019 11:00h**

**Sujet/Subject:** Sea Ice Parameter Retrieval with Physical Synergy of Active and Passive Satellite Data

**Langue/language** : Anglais/English

**Conférenciers/Lecturers:** Shiming Xu (Earth System Science, Tsinghua University)

**Résumé/Abstract:**

Sea ice is a key component in the global climate system. Satellite remote sensing is the major approach to the basin-scale observation of sea ice, informing the community of key findings including accelerated shrinkage and drastic thinning of the sea ice cover. As the major method for the estimation of sea ice thickness, satellite altimetry is hindered by the snow cover over the sea ice, which introduces large uncertainty to the sea ice thickness retrieval. Meanwhile, the snow over is a direct indicator of polar hydrological cycle, and a key modulating factor of air-ice-sea interaction. In this talk, I introduce recent works on simultaneous retrieval of sea ice thickness and snow depth by physical synergy of satellite altimetry and passive radiometry. Retrieval is carried out with CryoSat-2 (radar altimetry) and SMOS (L-band passive radiometry). With validations with various independent observations, we show that the retrieval yields realistic estimation for both sea ice thickness and snow depth. The generated data can be applied to climate studies, as well as data assimilation applications. The retrieval methodology can also be applied to laser altimetry (such as ICESat and ICESat-2) with collocating data from sensors such as AMSR-E and SMAP.