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Poster
Altimetry is an efficient tool to assemble a climate data record for oceans for more than 30 years but other types of surfaces can be studied thanks to satellite altimetry such as inland waters or sea ice.
Since 1991 and ERS1 launching, ice sheets are monitored and the long-term altimetric observations enable us to compute electromagnetic models, to help describe snowpack properties or to estimate volume balance and the contribution to the sea-level rise which is known to be 1mm/yr.
Saral/AltiKa was succesfully launched in February 2013 on the same orbit than previous satellites (Envisat, ERS series)in order to understand the whole new characteristics of SARAL and their impact on the altimetric waveforms and what can be deduced from them.
We thus here present a first global Calibration/Validation performed over ice sheets during the first 6 months of SARAL exploitation. Global/Calval methodology is similar to the one performed on oceanic surfaces with Jason and Topex/Poseidon, it helps us conqequently to use accurate and efficient analysis our Cal/Val on ice sheets.
But we have to take into account differences such as different atmospherical attenuations and various effects inducing a bias in our analysis and that are non-predominant in ocean altimetry : the slope effect, the surface roughness at various scales and the penetration of the radar wave into the snowpack.
Knowing all of this, we assess that SARAL/AltiKa is an innovative mission for the ice sheets monitoring and provides us with precious informations just like Jason 1,2,Topex/Poseidon did over ocean.
We compared with the former altimetric mission Envisat which provided more than a decade record.
We see a +3dB difference between Envisat and Saral backscatter coefficient and a +1m difference between Envisat and Saral leading edge width (analog to SWH) which confirms us the less penetration effect.
Moreover we are able to do a cross comparison and compared the SARAL track from the mean Envisat profile or with Icesat.
All of these methods whose results are detailed in this presentation show the importance of the ice sheets monitoring to assemble an accurate climate data record to complete with the informations
from ocean altimetry.
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