



IAG Scientific Assembly 2025: Geodesy for a changing environment

Symposium G08: Geodesy for Climate Research

Conveners: Annette Eicker, Carmen Blackwood, Balaji Devaraju, Franck Ghomsy, Maria Fernanda Camisay

This symposium is dedicated to the use of geodetic measuring techniques for innovative climate and Earth system studies. Modern geodetic observing systems document a wide range of changes in the Earth's solid and fluid layers at various spatial and temporal scales related to processes as, e.g., the terrestrial and atmospheric water cycle, ocean and atmosphere dynamics, sea level, ice-mass balance, and glacial isostatic adjustment. To fully resolve the spectrum of climate-related signals, it is essential to cross-compare and integrate observations collected over different time spans. Geodetic observables are also often compared with geophysical and climate models, helping to explain observations, test theories, evaluate simulations, and finally merge measurements and numerical models via data assimilation.

We appreciate contributions utilizing data from diverse geodetic observation techniques, including altimetry and gravimetry satellites, navigation satellite systems, satellite radio occultation and reflectometry, InSAR, VLBI, tide gauges, or remote sensing. We welcome studies that cover a wide variety of applications of geodetic measurements and their combination to observe and model Earth system signals in hydrological, ocean, atmospheric, climate and cryospheric sciences. In particular, we encourage contributions that explore novel data fusion techniques to enhance the resolution and accuracy of climate-related geodetic measurements. Any new approaches helping to separate and interpret the variety of geophysical signals are equally appreciated. Additionally, we emphasize contributions that focus on real-time or near-real-time geodetic monitoring for climate applications, as this can provide rapid insights into extreme events such as sudden ice mass losses, sea level changes, or shifts in atmospheric patterns and their accurate prediction.

Contributions working towards any of the goals of the Inter-Commission Committee on "Geodesy for Climate Research" (ICCC) of the International Association of Geodesy (IAG) are very welcome in this symposium. We also encourage collaboration between geodesists and climate modelers to foster interdisciplinary approaches that enhance the understanding of climate dynamics using geodetic data.

Keywords: satellite gravimetry, altimetry, GNSS, sea level, water cycle, ice mass balance, water vapor, climate model evaluation, earth orientation parameters, atmospheric angular momentum