



# SPECIAL SESSION 1

## Forests in the global carbon cycle: connecting remote sensing, forest models and artificial intelligence

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### **The goal of the session**

Forests are characterized by processes acting at various spatial scales. Consequently, forest attributes like biomass stocks or carbon fluxes vary in space and time. Understanding and predicting forest attributes in response to global change is a major challenge in ecological research.

Remote sensing techniques are often applied to estimate forest states at large scale. However, these methods can be limited in terms of accuracy, extent or resolution leading to uncertainties. To overcome such limitations and to improve estimates of forest attributes, the combination of remote sensing with forest modelling and data science represents a promising approach. We want to explore innovative linkages between remote sensing (e.g., lidar and radar), forest modelling and artificial intelligence at different spatial scales. We encourage scientists to discuss applications for different regions in the world.

### **Potential Topics**

- Linking remote sensing and forest modeling to assess forest biomass and carbon flux estimation.
- Estimation of forest structure by remote sensing (e.g., lidar or radar).
- Spatial heterogeneity of biomass and forest productivity of the Amazon rainforest.
- Detecting forest disturbances by linking remote sensing with vegetation modelling.
- Estimation of forest carbon balances based on remote sensing and forest modelling.
- Field observations and forest models for the CAL/VAL of remote sensing products.
- The fusion of upcoming satellite missions with forest modeling.