

# The GEWEX Land-Atmosphere Feedback Observatory (GLAFO)

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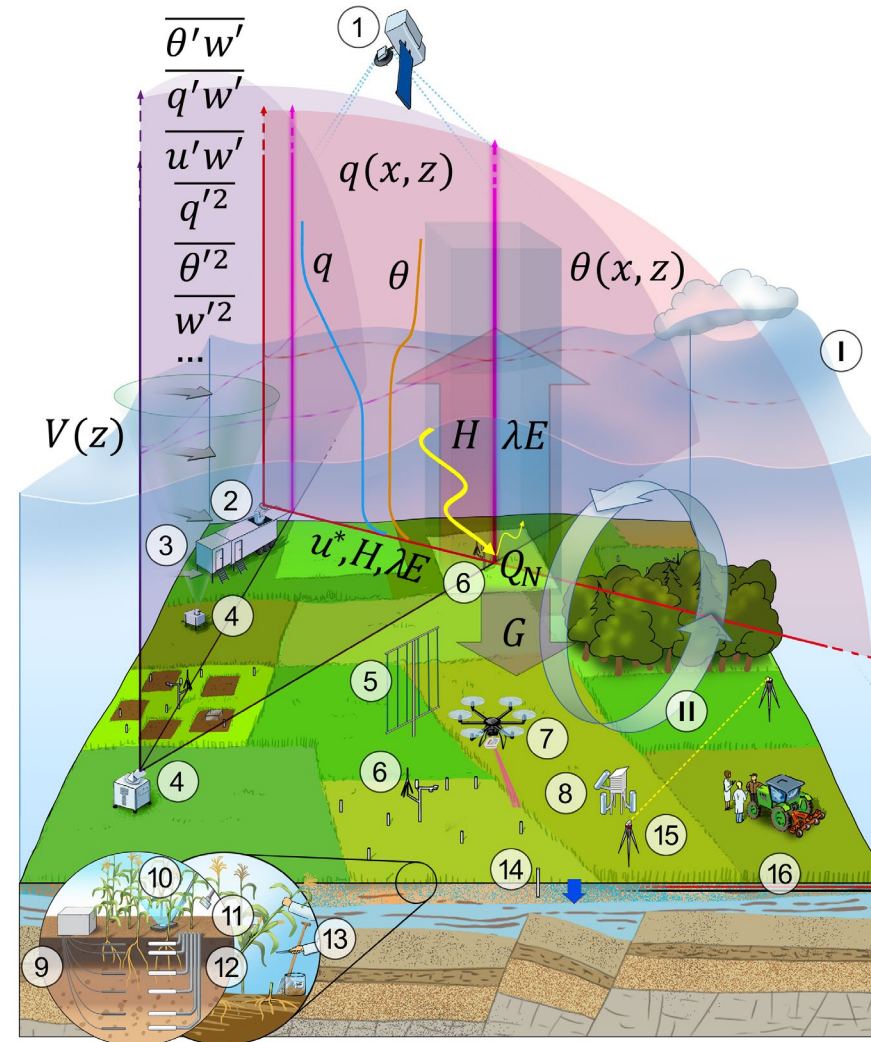
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## Motivation:

1. A profound understanding of L-A feedbacks is fundamental for the development of advanced Earth system models.
2. Suitable observations are lacking in all climate regions.
3. These observations must cover all compartments of the land system from bedrock to the lower atmosphere.
4. We propose a new sensor synergy and/or enhancements of current observatories and networks such as AmeriFlux to observe the atmospheric leg of L-A feedbacks, which must be considered as **Terra Incognita** in Earth system science.



Proposed sensor synergy for the GLAFOs.

I: ABL top, II: mesoscale vortex. 1: Satellite remote sensing, 2: lidar synergy, AERI, MWR, cloud radar, 3, 4: scanning lidar systems, 5: fiber-based distributed sensors, 6: energy balance stations, 7: UAV, 8: isotope sensor, 9: TDR, 10: LAI measurement, 11: gas exchange system, 12: tensiometer, 13: in-situ canopy measurements, 14: soil moisture and temperature network

## Key goals of the GLAFOs:

1. Understand L-A feedbacks over a broad range of temperature and soil conditions, vegetation properties, ABL evolutions, and large-scale forcings
2. Study and quantify the effects of land use and land cover change (LUCC) on regional weather and climate
3. Contribute to advanced simulations and predictions of extreme events

A prototype is LAFO in Stuttgart, Germany

