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Abstract:

Clouds in 4D

The spatially varying and temporally dynamic atmosphere presents significant, exciting and fundamentally new problems for imaging and computer vision. Some problems must tackle the complexity of radiative transfer models in 3D multiply-scattering media, to achieve reconstruction based on the models. This aspect can also be used in other scattering media. Nevertheless, the huge scale of the atmosphere and its dynamics call for multiview imaging using unprecedented distributed camera systems, on the ground or in orbit. These new configurations require generalizations of traditional triangulation, radiometric calibration, background estimation, lens-flare and compression questions. This focus can narrow uncertainties in climate-change forecasts, as we explain.