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Severe weather observed by infrasound, lidar and airglow measurements during the ARISE OHP Campaign

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In the frame of the ARISE project dedicated to provide a new 3D image of the atmospheric dynamics in the different atmospheric layers, an observation campaign using infrasound, lidar and airglow measurements started in July 2012 in the Observatoire de Haute Provence. This paper is dedicated to present first observations of severe weather, including sprite producing thunderstorms and a tornado. The study considers acoustic waves but also focuses on gravity waves at the origin of larger scale disturbances. The coupling between atmospheric layers during these events is analyzed using numerical weather simulations. The presentation discusses the benefits of the use of the three different technologies for a better description of these events.