

Professor Cathryn Mitchell: 2020 Chapman Medal

The 2020 RAS Chapman Medal is awarded to Professor Cathryn Mitchell for her pioneering research revealing the Earth's ionosphere in response to extreme space weather events. Professor Mitchell developed a new and innovative Earth observation technique by adapting medical tomography to image the Earth's ionosphere, revealing the dynamics of the near-Earth space environment. Her use of Global Positioning System satellite signals as a source for space-weather data assimilation, through a new mathematical inversion algorithm, has given us the first global-scale 3D time-evolving view of the ionosphere in response to space weather storms. She continues to pioneer new observation techniques, this year producing the first ever single-frequency Geostationary Global Positioning System ionospheric measurements. Professor Mitchell's innovations in tomography have crossed traditional discipline boundaries and are now applied in other fields including medical imaging, nuclear imaging and cosmic-ray muon tomography.

For these reasons Professor Cathryn Mitchell is awarded the RAS 2020 Chapman Medal.