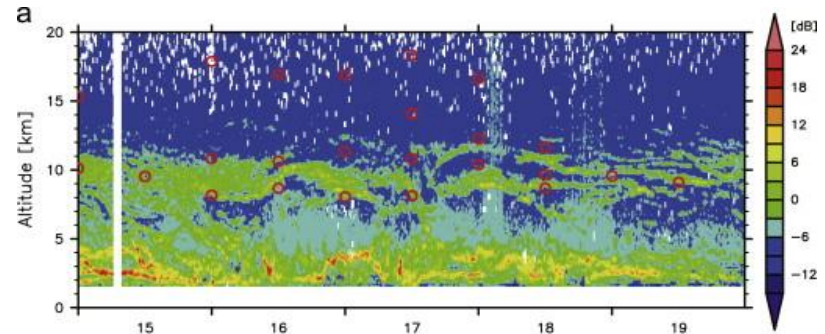


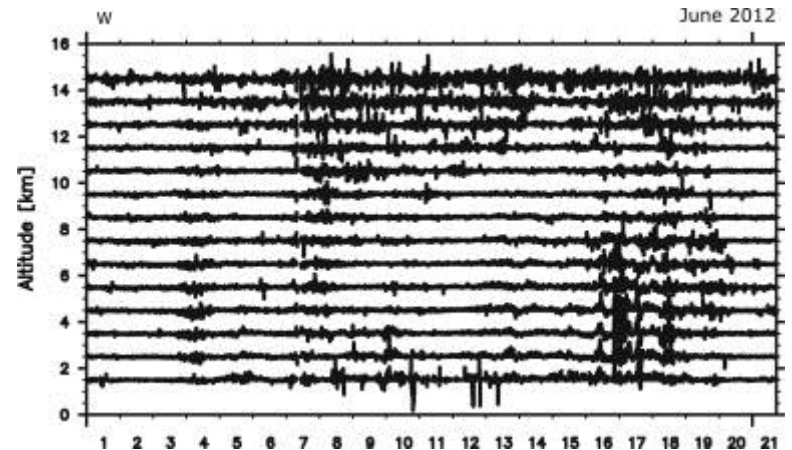


# A severe snow storm observed by the PANSY radar

- The PANSY radar started tropo/stratosphere observations from April 2012 with 12/55 of a full array system (i.e., 228 antennas).
- Right-top panel shows echo power of vertical beam in 15-18 June during class-B blizzard. Strong echo layers in an 8-12 km height region correspond to multiple tropopauses, showing strong undulation of the tropopause.
- During the blizzard, strong vertical wind fluctuations and large momentum fluxes were detected throughout the troposphere (left and right-bottom panels).

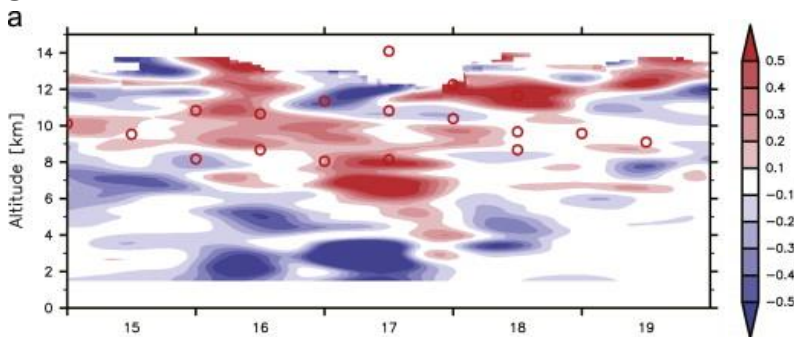


Height-time section of echo power observed by the vertical beam of PANSY during a blizzard. Circles denote thermal tropopauses determined by radiosonde data.



Time series of unfiltered vertical winds in 1-21 June 2012. The vertical length of adjacent horizontal lines corresponds to 3m/s.

(Sato et al., J. Atmos. Solar-Terr. Phys., 118A, 2-15, 2014.)



Time-height section of zonal momentum flux  $(\text{m/s})^2$  due to disturbances with a period shorter than 13 h, which is the inertial period at Syowa.