

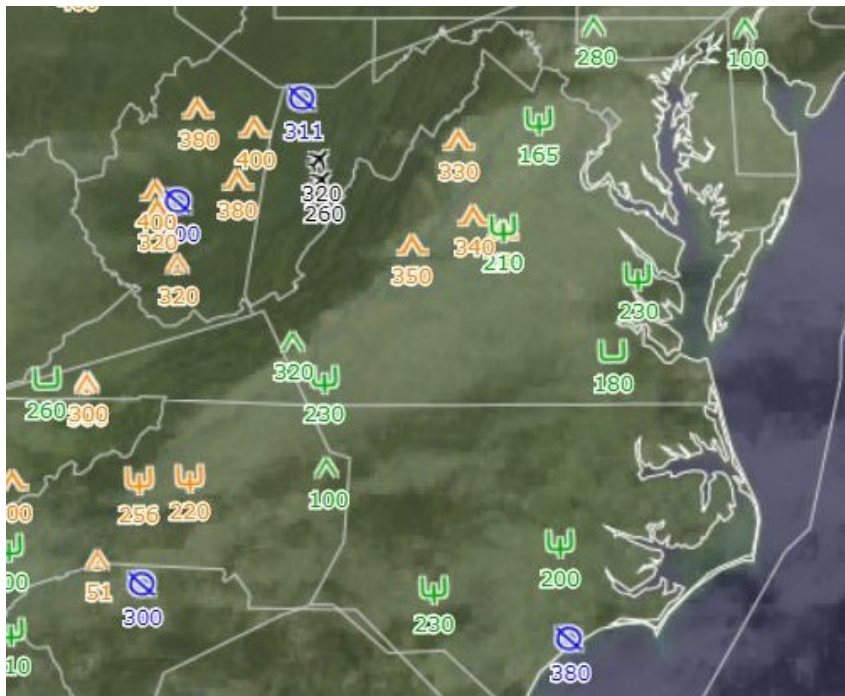
Mini case study: Orographically-induced mid/high cloud shield E of the Central Appalachians

During the morning of 11 Mar 2019, moist flow and wave action over the cntrl Appalachians generated a mid-high cloud shield and aided in enhancement of upper level turb just E of the higher mtn peaks in E WV/W VA. Lgt-mod icing from 160 to FL260 was reported throughout the Mid-Atlantic and SE US regions. (See pireps.)

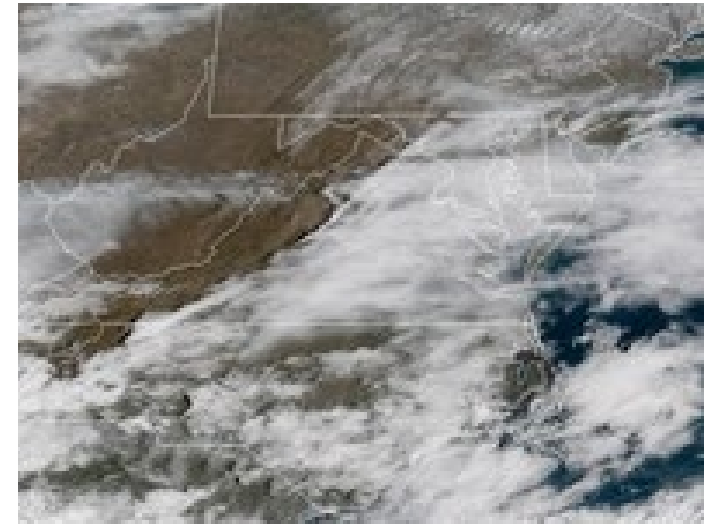
Per a RAH fcst reference aid...

- These cloud shields **form predominantly in the cool season and are favored from the evening into the morning**
- **There is generally an upstream moisture source** (we can see clouds W of the area on satellite and a moist layer between 500 hPa and 300 hPa on the RNK sounding)
- **An inversion/isothermal layer exists near mountaintop layer in the 850 – 750 hPa layer** (see RNK sounding); **mountain waves propagate vertically above the inversion layer all the way to the tropopause, increasing the upward vertical motion through the moist layer, resulting in clouds, icing and enhanced turb**
- **Wind normal to the mountain ridges increases with height** (this is what occurred yesterday – see the RNK sounding)

11 Mar 19 1045 – 1445Z turb & ice pireps aoa 100



11 Mar 19 1452Z GOES-E ABI Geocolor Image



11 Mar 19 12Z upper air sounding – RNK (SW VA)

