A new classification of the Arctic spring transition in the middle atmosphere

V. Matthias, G. Stober, A. Kozlovsky, M. Lester, E. Belova and J. Kero

**Stratosphere**
- stratospheric final warming (SFW)
- SFW onset days vary by about 2 month
- common classification: early/late or 10hPa/1hPa-first

**Mesosphere**
- final wind reversal earlier and less variable as in stratosphere, mostly propagates downward
- studies are much rarer, less systematic and decoupled from stratospheric investigations

**What is missing?**
- systematic studies of the spring transition covering the whole middle atmosphere
- common classification do not consider all SFWs
- it is not clear if and how pre-winter conditions have an impact on when and how spring transition take place

**What we want to**
- introduce a new type of classification based on temporal-vertical evolution of polar vortex
- includes: stratosphere and mesosphere, all spring transitions, SSWs in preceding winter

**timing of major SSW in preceding winter**
- mid-winter SSW
- late-winter SSW
- early-spring SSW
- mid-spring SSW
- no negative NAM

5 new classes

V. Matthias, G. Stober, A. Kozlovsky, M. Lester, E. Belova and J. Kero