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

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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

5 new classes

downward propagating negative NAM