SMHI

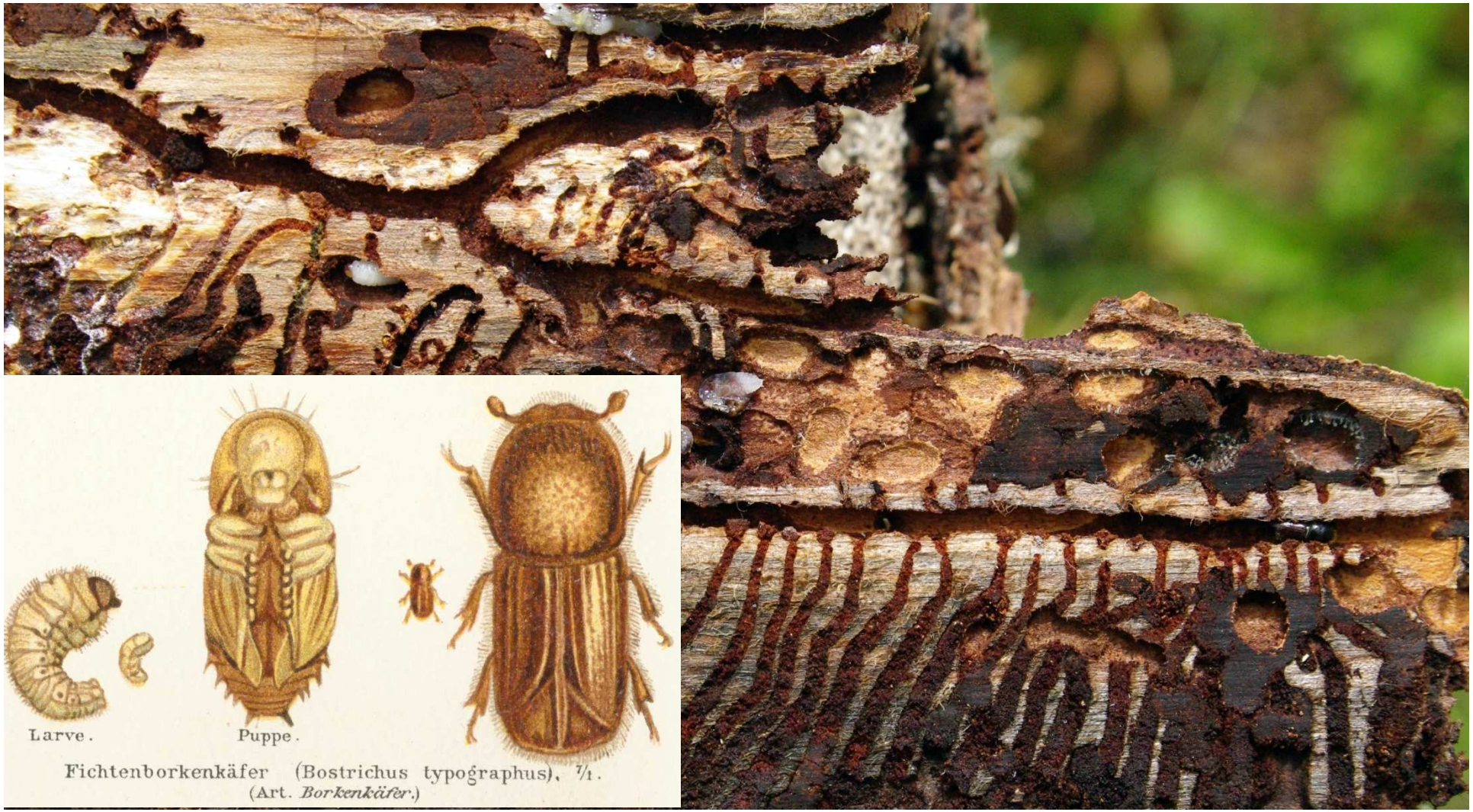
Examples of complex tailored user-defined 'indices'

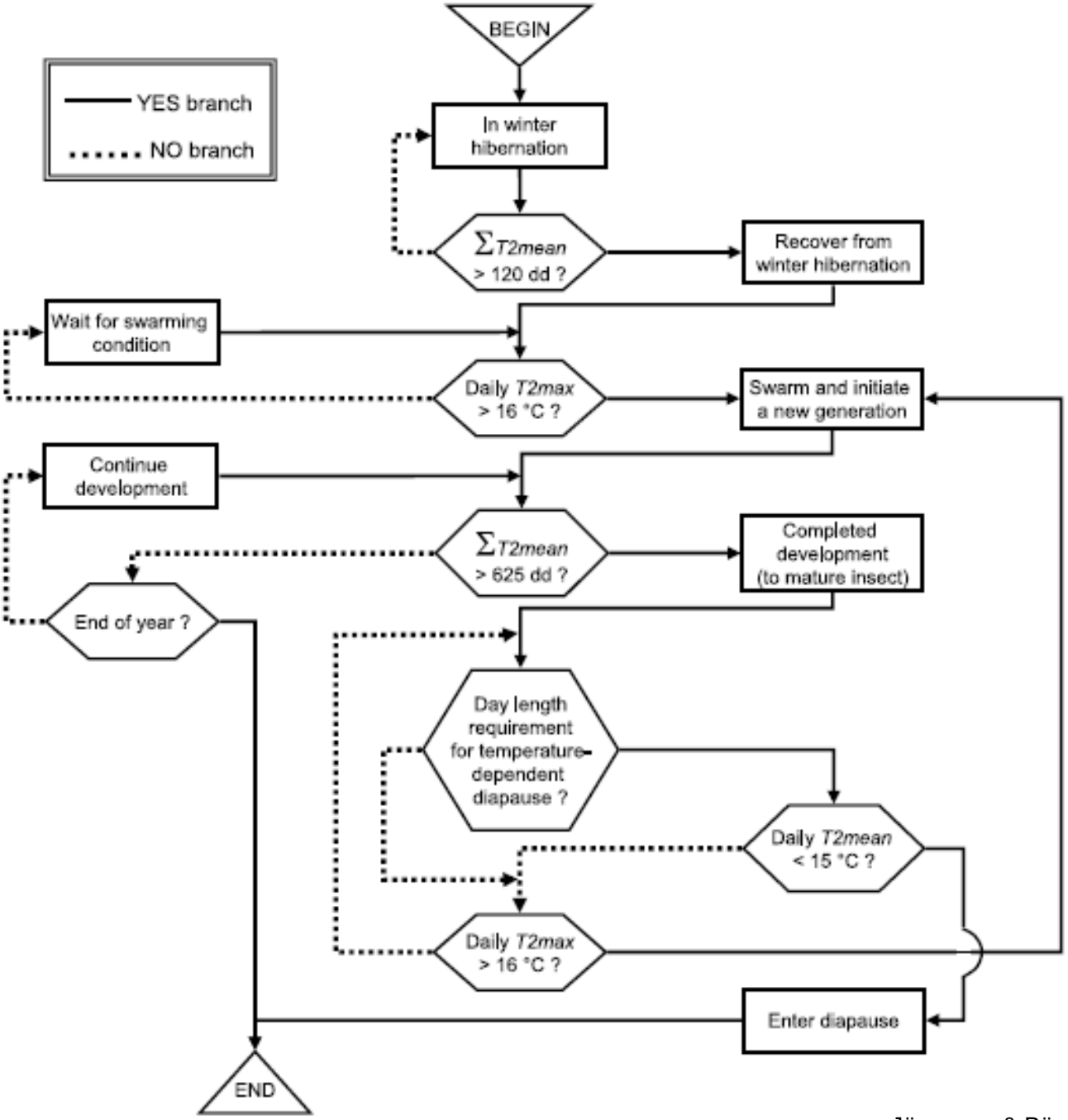
By the way ….

Yesterday Dan Hollis, Met Office, wrote on CF-Metadata:

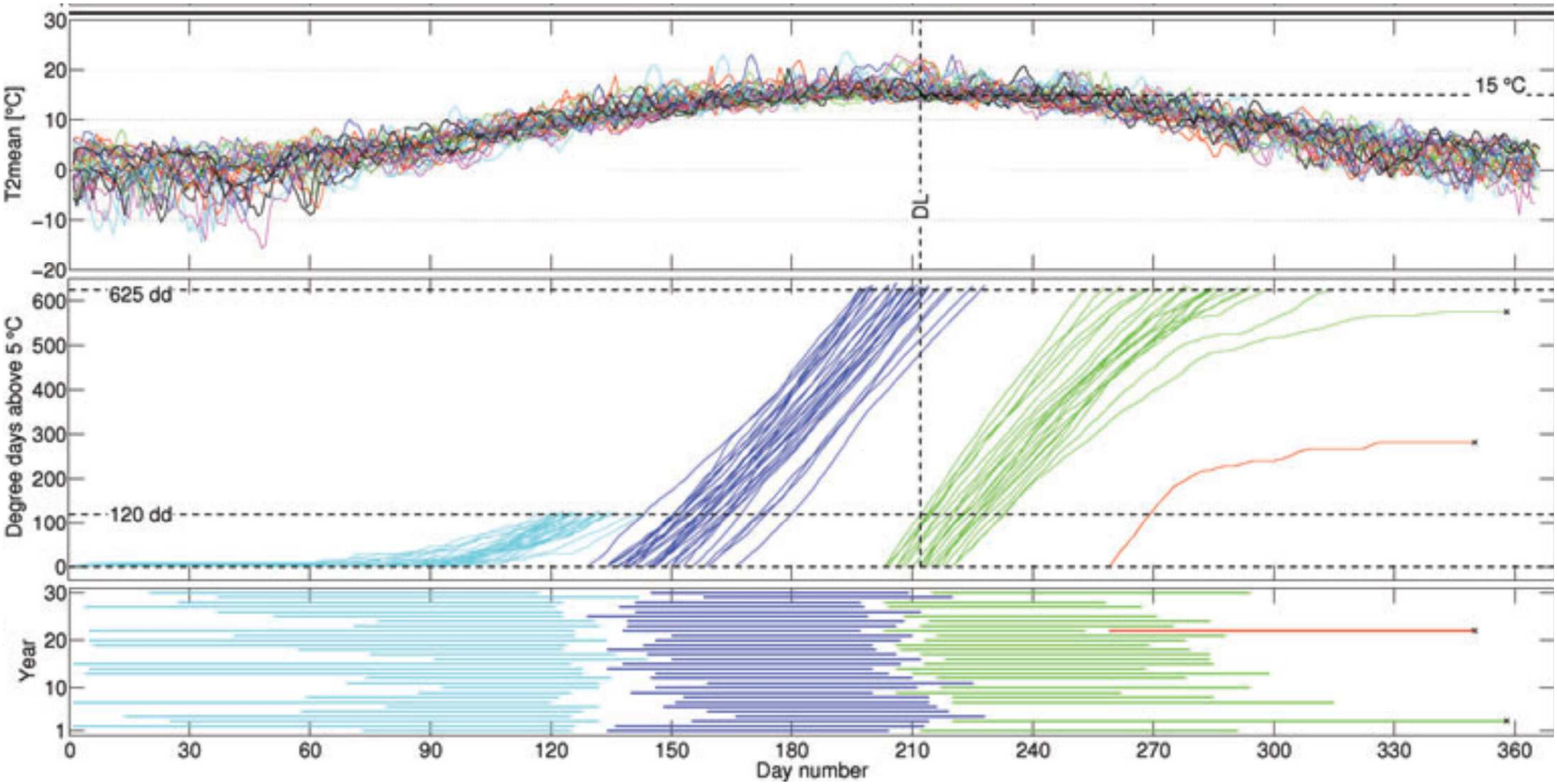
PS I have a whole bunch of other metrics that I'm looking at e.g. length of the longest spell, number of spells greater then N days etc. These seem even more complicated to describe using CF. Something for another post I think...

(1) There is something bugging boreal forests





Jönsson a& Bärring, 2011, Tellus, 63A, 158-173



A chain of indices to describe the annual life-cycle of spruce bark beetles. Each one is of interest, as is the cumulative effect.

Jönsson a& Bärring, 2011, Tellus, 63A, 158-173

(2) Some like potatos …. or the leafs

Colorado potato beetle ‘model’

1. **60–90 degree-days (DD) for emergence after winter hibernation**
2. **Additional 51–70 DD for feeding, mating and egg laying**
3. **Additional 300 DD for the development from egg to adult beetle**
4. **If diapause (day-length requirement) met then hibernate**
   else repeat 2 and 3

(DD threshold is 10 ℃ or 12 ℃)

Potato ‘model’

1. **631DD (threshold 0 ℃) to emergence**
2. **Additional 800 DD / 1800 DD to maturation of early / late varieties (threshold 2 ℃)**
3. **Harvest**

‘Models’ based on climate indices to analyse the seasonal interaction between a crop and a pest.

Pulatov et al., 2016, *Agric. Ecosys. Environ.,* 224, 39–49

Take home message

- Climate indices can be embryos for more advanced models --- as such they can be viewed as back-of-the-envelope calculations
- As such, climate indices often evolve from simple to more complex may be become
- Climate indices can be very powerful tools for impact scientists
- In practice the limitation is often what kind of tools are available for computing climate indices – their flexibility and user-friendliness

- And for this workshop: there is a limit to how far the CF convention can go provide metadata descriptions for ever more complex indices