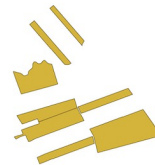


EO for agricultural statistics

Object-based remote sensing



Field parcels

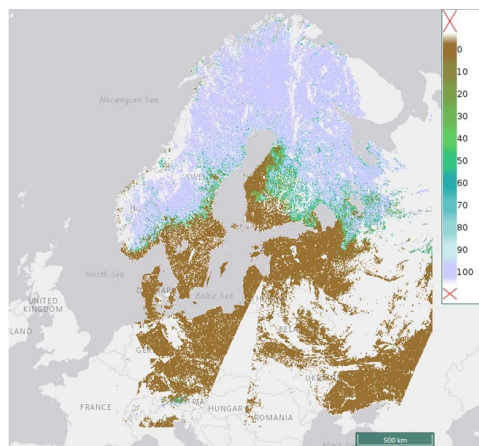


EO data used

- Sentinel-2 (optical)
 - L2A downloads from SciHub
 - Stored to Allas
 - E.g. <https://a3s.fi/Sentinel2-MSIL2A-cloud-0-95-2020-T35WPM/index.html>
- Sentinel-1 (Polarimetric SAR)
 - 11-day mosaics by FMI
 - @Puhti: /appl/data/geo/sentinel/s1/
- Sentinel-2
 - 30-day ND*I mosaics by SYKE
 - @Puhti: /appl/data/geo/sentinel/s2/

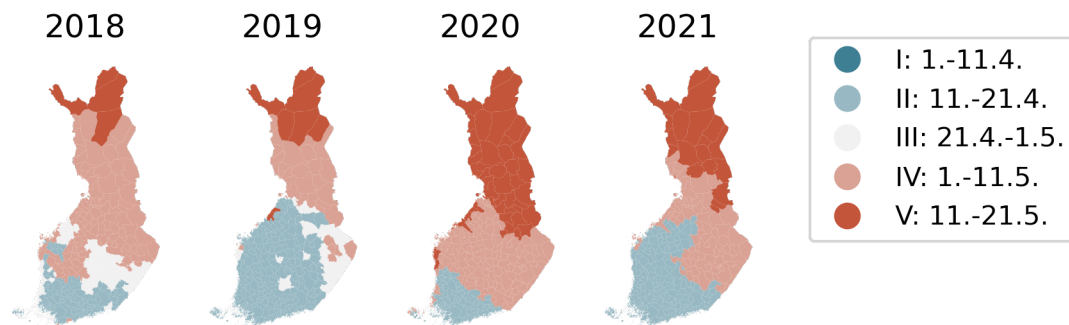
EO data used (continued)

- Fractional Snow Cover by SYKE
 - Downloaded to Puhti from SYKE Tarkka



Topic 1: winter-time vegetation cover of fields

- Off-season vegetation cover is preferred
- When to monitor?
- FMI: the start of the growing season (date)



- SYKE: FSC (daily)
- SYKE: ND*Is (30-day) + FMI: S1 mosaics (11-day)
- Paper: Luotamo et al. (2021) <https://www.mdpi.com/2076-3417/12/2/679>

CSC Puhti

- Parallelization with Python
- Is there snow on fields: 1,1 million fields, snow cover product
 - `#!/bin/bash`
 - `#SBATCH --job-name=readSnowMasks`
 - `#SBATCH --partition=small`
 - `#SBATCH --time=04:00:00 # <4h`
 - `#SBATCH --ntasks=11`
 - `#SBATCH --mem-per-cpu=20000 # >13G`
- PyStan in Puhti

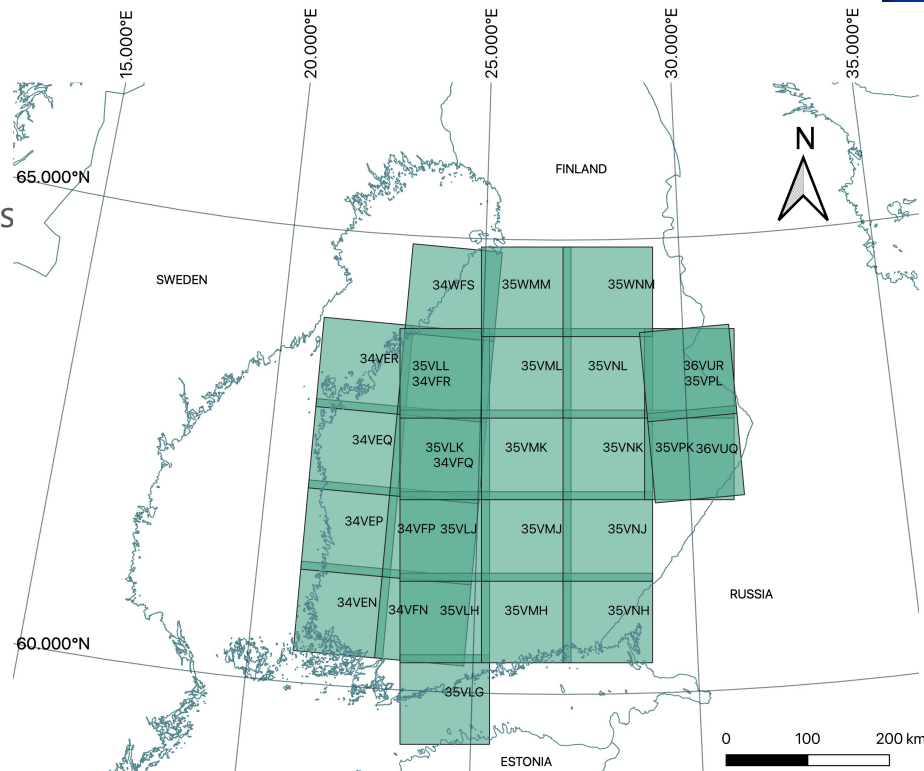
Topic 2: In-season crop yield forecasting



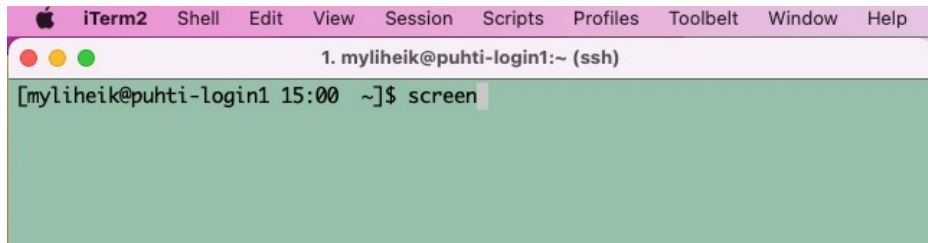
CSC Puhti

- 28 Sentinel-2 tiles
- 21,690 JPEG2000 images / 2,160 SAFEs
- Sample of field parcels, 10^4

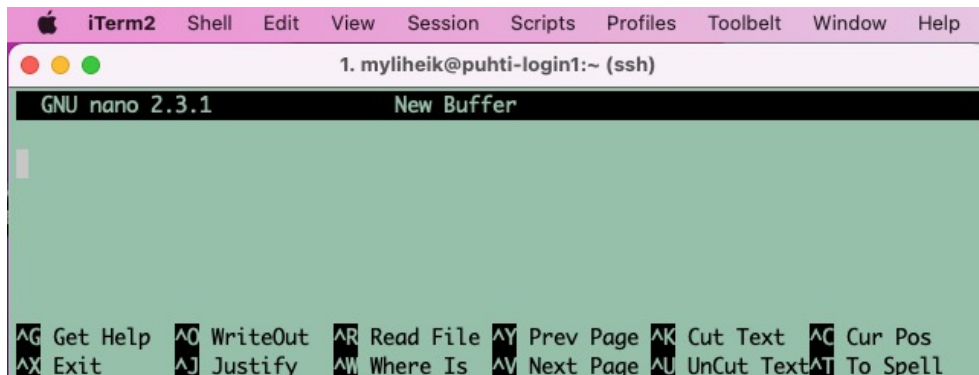
- Array job:
- `sbatch_commandlist \`
-commands cloudy-komennot.txt \
-t 00:40:00 \
-mem 8000 --tmp 20 (G)



Favorite tools

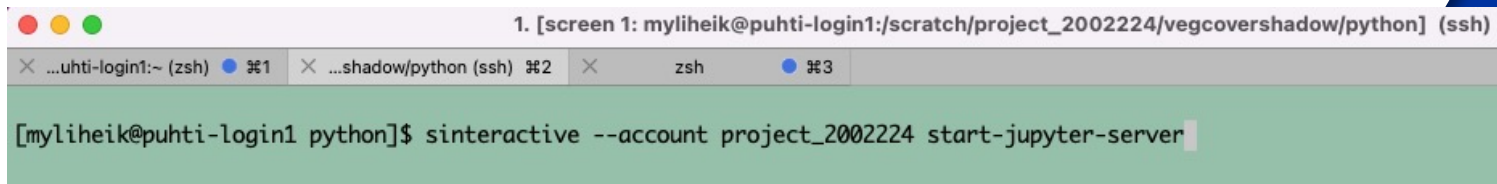


```
iTerm2  Shell  Edit  View  Session  Scripts  Profiles  Toolbelt  Window  Help
1. myliheik@puhti-login1:~ (ssh)
[myliheik@puhti-login1 15:00 ~]$ screen
```



```
iTerm2  Shell  Edit  View  Session  Scripts  Profiles  Toolbelt  Window  Help
1. myliheik@puhti-login1:~ (ssh)
GNU nano 2.3.1  New Buffer

^G Get Help  ^O WriteOut  ^R Read File  ^Y Prev Page  ^K Cut Text  ^C Cur Pos
^X Exit      ^J Justify   ^W Where Is  ^V Next Page  ^U UnCut Text ^T To Spell
```



```
1. [screen 1: myliheik@puhti-login1:/scratch/project_2002224/vegcovershadow/python] (ssh)
...uhti-login1:~ (zsh)  #1  ...shadow/python (ssh)  #2  zsh  #3
[myliheik@puhti-login1 python]$ sinteractive --account project_2002224 start-jupyter-server
```



GitHub

Thank you!

