UiO : Department of Geosciences
University of Oslo

Workshop

Geophysical Data in Petroleum Geosciences: how to find and load the data?

Topics

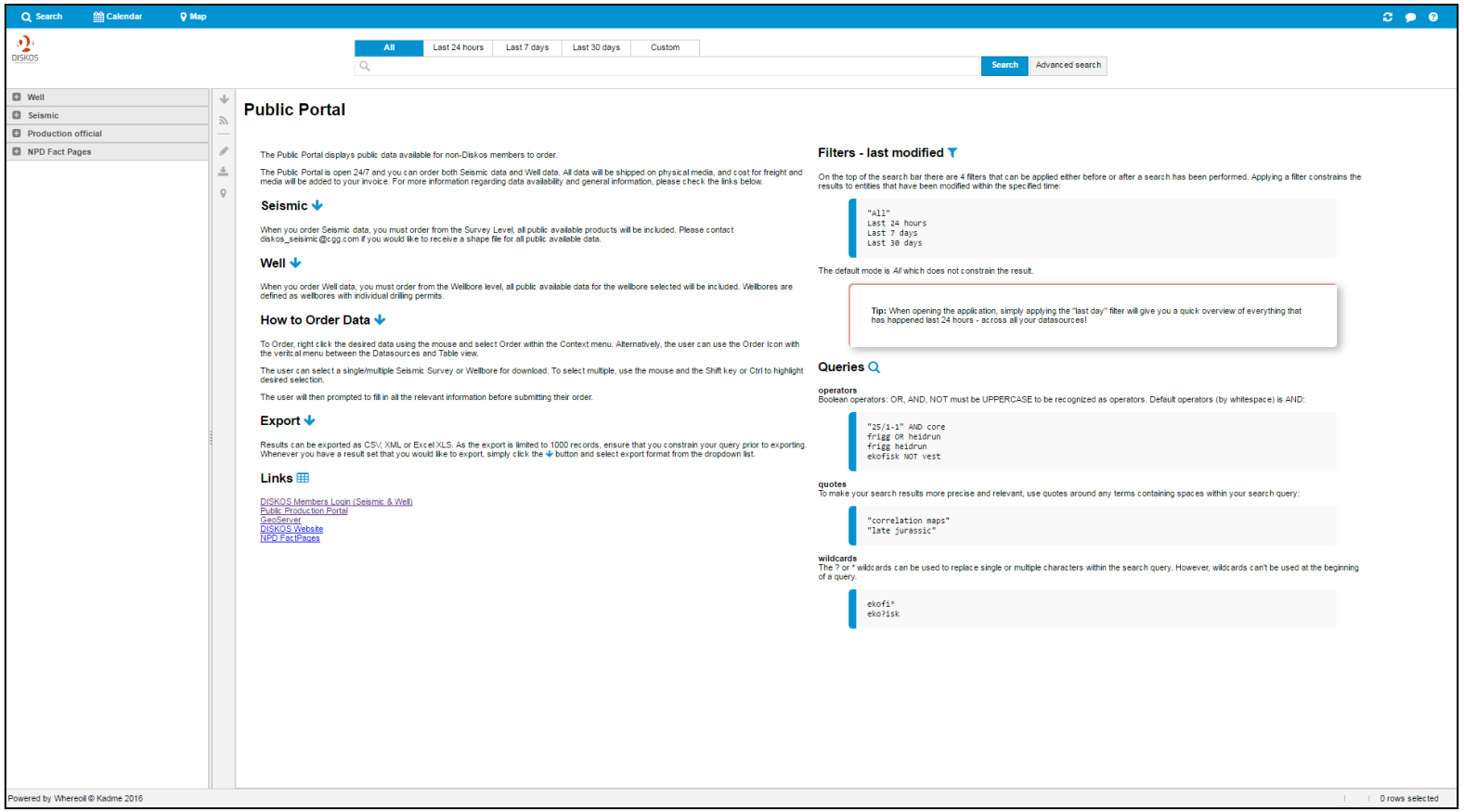
- The DISKOS Public Data Portal
- Seismic Data (SEG-Y)
- Well Data
- Demo: Petrel™ on Virtual Infrastructure

What is DISKOS?

- National Data Repository for Petroleum data
- Joined venture between NPD and oil companies
- Seismic, Well and Production data
- Currently operated by CGG, Envy, Kadme
- Public and member access
- Currently containing ~3-4 Pb
- Expected 20-30 Pb by the end of 2020

DISKOS Public Data Portal

https://portal.diskos.cgg.com/whereoil-data/



http://www.diskos.no/

How to order data

- Check the DISKOS Public Data Portal for available Public data
- Dump your selection to xls, csv or xml and send it to drift@geo.uio.no
- We will process your request. We have currently three people that can handle DISKOS download requests

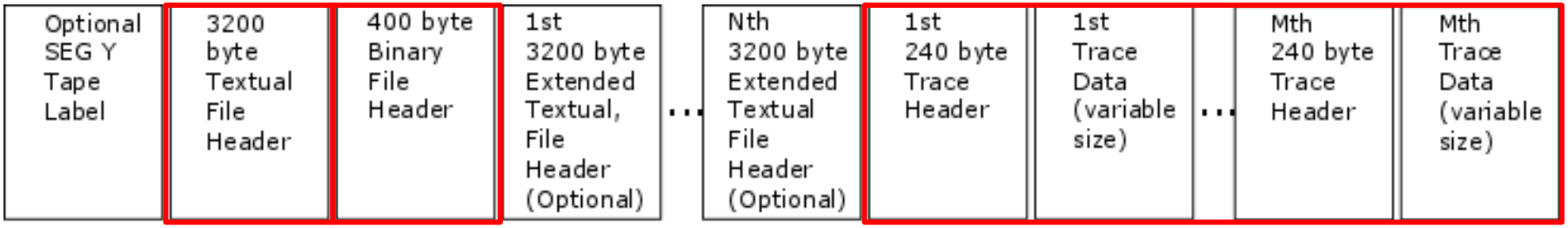
Questions about DISKOS ?

NORWEGIAN PETROLEUM DATA

Seismic data

Data format

- SEGY-format
- Open Standard since 1973 (revised in 2002)
- Controlled by the Society of Exploration Geophysicists



Seismic data

Loading parameters

- For entire data set:
  - CRS (UTM Zone)
  - Line name (for 2D)
  - Sample format
  - Sample rate
  - Number of samples
  - Time/Depth of first sample
- For every trace:
  - Trace number
  - Line/Inline number
  - CDP/Xline number
  - Shotpoint number
  - X, Y coordinate
  - Coordinate scale

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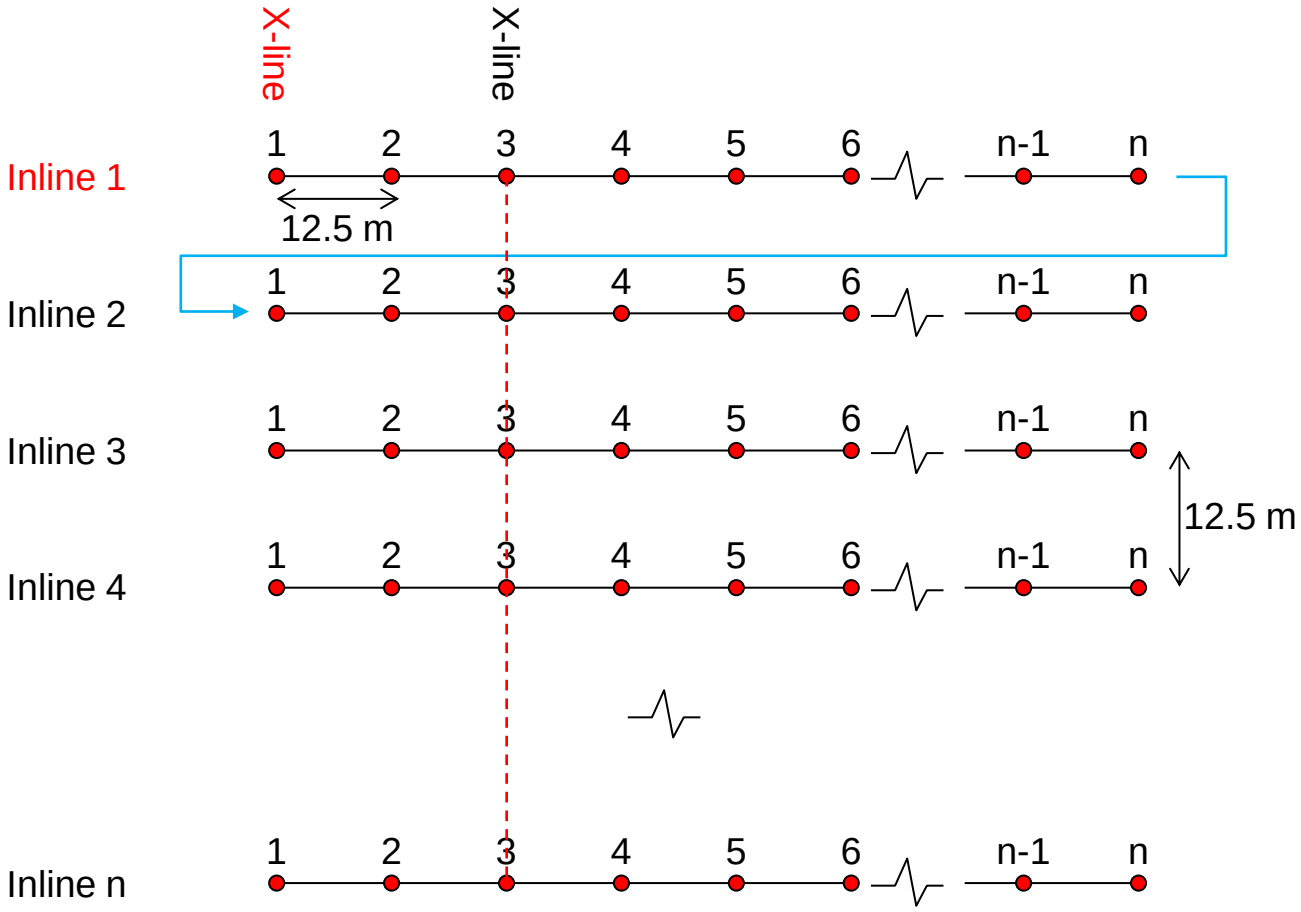
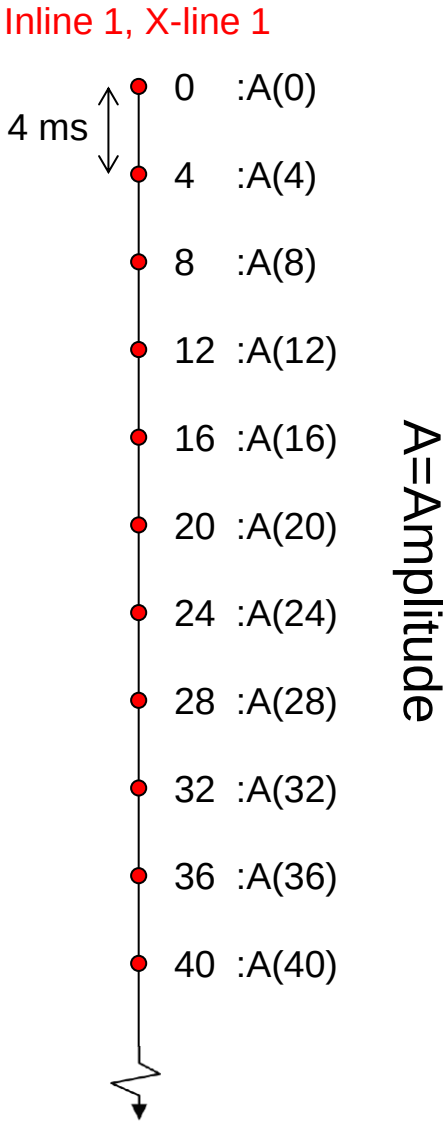
3D Data cube

Horizontal

Vertical





Exercise

- SeiSee to examine SEG-Y files
- Using Petrel to load SEG-Y files
- Using OpendTect to load SEG-Y files

Questions about SEG-Y?

Well data

- Important data to load (all ASCII-files)
  - Well headers (primary metadata of the well)
  - Well path
  - Time-depth relations
  - Well logs
    - *Log ASCII Standard (LAS)*: Defined and maintained by the Canadian Well Logging Society
  - Well markers

Well headers

- Obligatory information
  - Well name
  - X-coordinate
  - Y-coordinate
  - Depth reference to sea-level
- Additonal information
  - Total measured, drilled depth (=length of borehole)
  - True vertical depth
  - Operator
  - Status of the well
  - Spud date
  - Etc.

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Well path

- Describes the trajectory of the borehole
  - Measured Depth, Azimuth, Dip
  - DX, DY, True Vertical Depth
  - X-coordinate, Y-coordinate, True Vertical Depth

DX/DY: The difference between the X/Y-coordinate at depth ‘n’ and the X/Y-coordinate at depth ‘n-sr’, where ‘sr’ is the sampling rate

Time-Depth relations

- Necessary to tie the well (measured in depth) to seismic data (measured in travel time)
  - Checkshots
  - Vertical Seismic Profiles

Well logs

- Different kind of geophysical measurements recorded along the borehole trajectory
  - Formation density, formation resistivity, etc
  - Stored in so called LAS-files

Well markers

- Positions along the wellbore that define a specific geological feature like lithostratigraphic interfaces and faults
  - For Norwegian wells, see npd.no

Questions about wells?

Virtualization

- Working with large data sets and complex visualizations?
  - Need more RAM
  - Need better GPU

- Workstation price 60-80 kNOK

Virtualization

- GEO/USIT VMware solution
- Tailored machine on demand
- Shared resources
- Use and throw

Demo