

Webviz-4D

Drogon
15.03.2022

Webviz-4D

Vision:

- Make 4D seismic results easily available in a standalone web application

Building blocks:

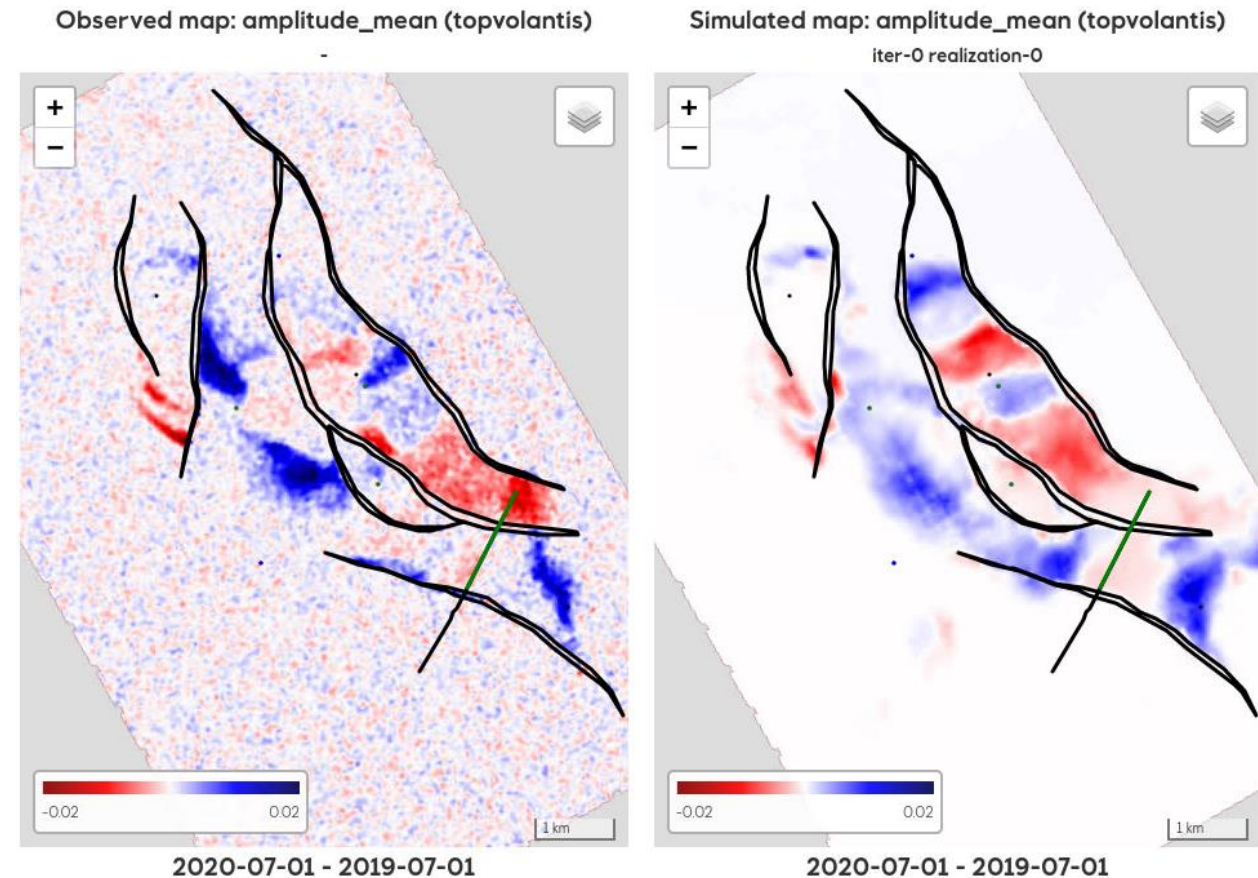
- [Webviz Subsurface](#) framework and components (plugins)
- Attribute maps based on **FMU workflow**
- Well and surface handling by [XTGeo](#)
- Field specific configurations

Application overview

- Documentation
- Observed and simulated timelapse maps
- Table with wellbore overview
- Interactive plotting of injected and produced volumes in the different 4D intervals
- Tables with production/injection volumes in the different 4D intervals

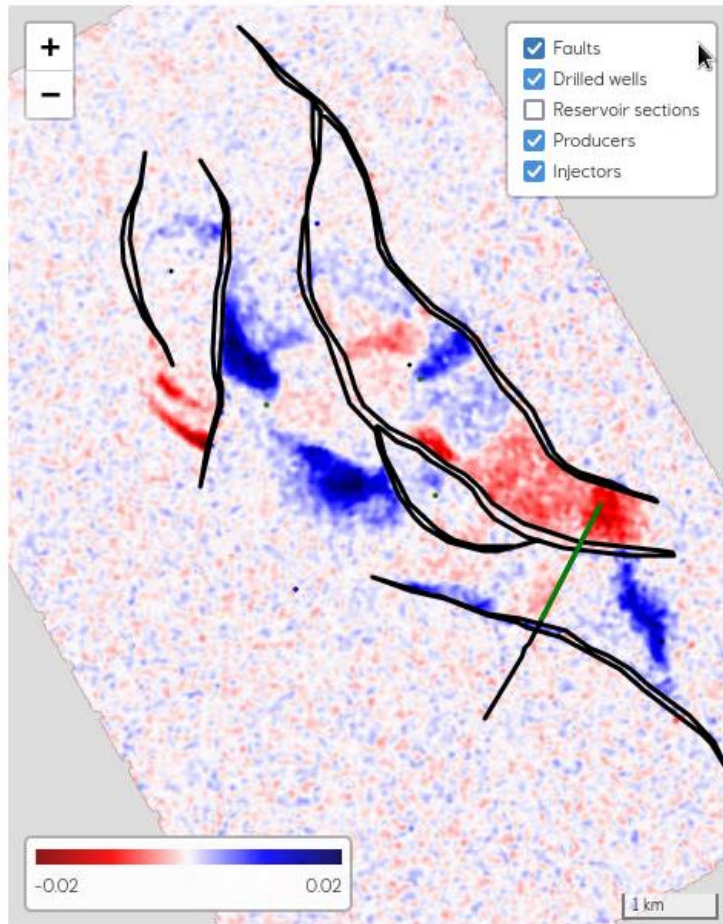
Webviz-4D Main functionality

- Display observed and simulated timelapse maps together with well trajectories
- Option to display only producers and injectors in a selected 4D interval
- Display tooltip when pointing at a well with information about production/injection volumes
- Table with overview of well and production data information
- Interactive plotting of injected and produced volumes in 4D intervals
- Tables with overview of injected and produced volumes



Webviz-4D Well layers

Observed map: amplitude_mean (topvolantis)



2020-07-01 - 2019-07-01

Standard Well layers

Drilled wells

- Whole wellpaths for all drilled wells

Reservoir sections

- Wellpaths below top reservoir (for all drilled wells)

Producers

- Wellpaths below top reservoir for production wells in the selected 4D interval

Injectors

- Wellpaths below top reservoir for injection wells in the selected 4D interval

Webviz-4D Well layers

Additional possible Well layers

Current producers

- Wellpaths below top reservoir (for currently active producers)

Current injectors

- Wellpaths below top reservoir (for currently active injectors)

Planned wells

- Wellpaths for planned wells

Producers - completed

- Top and base of completed/perforated part of wellpaths for production wells (in the selected 4D interval)

Injectors - completed




- Top and base of completed/perforated part of wellpaths for injection wells (in the selected 4D interval)

Hints and tricks

- **Well layers in Observed and simulated maps**

- When checking on a well layer, the new layer will always be displayed on top of any existing layers. This means e.g., that the «Drilled wells» layer will always cover any of the production/injection layers (if already displayed). However; displaying any of the “completed” layers on top of «Drilled wells» or «Reservoir sections» can be quite useful.

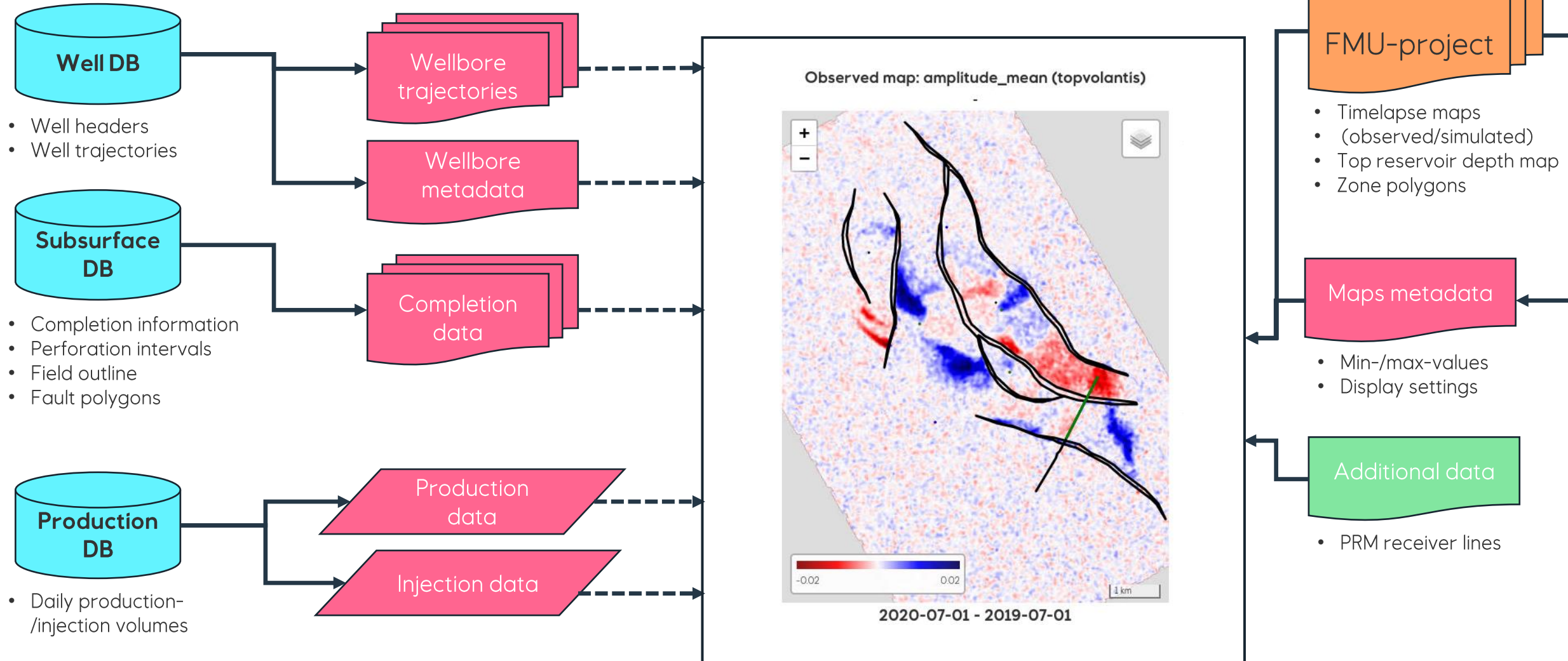
- **Filter rows or sort table in Wellbore overview or any of the volume tables**

- Filtering is done by enter a text to be matched in the second row of a column, e.g.; “production” in the “Type” column or “2020” in the “Start oil prod.” column
- Sorting of the table is done by clicking at the  icon to the left in a column header. The icon will change to indicate whether the sorting is ascending  or descending .

- **Filters in production/injection plots**

- Several options (wells or fluids) can be selected by either pressing Ctrl or Shift when clicking at another well or fluid type.

Input data (for real fields)



Data preparation

- **Scan FMU files:**
 - Create overviews of all timelapse maps and associated metadata
 - Copy fault polygons for the different geological zones (optional)
- **Extract data from internal databases:**
 - Store well paths and metadata for all drilled wells
 - Store field outlines (initial GOC/OWC) and fault polylines
 - Store daily fluid volumes for all production/injection wells
 - Store completion details for all drilled wells
- **Compile tables with:**
 - Fluid volumes (production/injection) in the actual 4D intervals
 - Well overviews

Drogon dataset

Drogon is a synthetic dataset for training. The dataset is openly available: [Drogon output test dataset](#).

The conceptual description of Drogon can be found here: [drogon conceptual description](#), but a quick overview is given below:

- The reservoir is in the Volantis Group, which has three formations: Valysar Fm, Therys Fm and Volon Fm
- Exploration wells:
 - 55/33-1, 55/33-2, 55/33-3
- Oil producers:
 - 55/33-A-1, 55/33-A-2, 55/33-A-3, 55/33-A-4
- Water injectors:
 - 55/33-A-5, 55/33-A-6
- Seismic acquisition dates:
 - 2018-01-01, 2018-07-01, 2019-07-01, 2020-07-01

Configuration

Configuration of Webviz-4D is done with 2 configuration files (currently some overlap in content):

- **config.yaml:**
 - Used when building and launching the Webviz-4D application
 - Describes the content and layout of the application
- **settings.yaml:**
 - Used as input to the data preparation scripts
 - Defines folders and filenames
 - Defines colors, colormaps and map limits

The configuration files used in this instance of Webviz-4D for Drogon are showed in the sections called **Information – How was this made**