description of the

ECV Graphics

based on the data available from

http://climatemonitoring.info/ecvinventory/

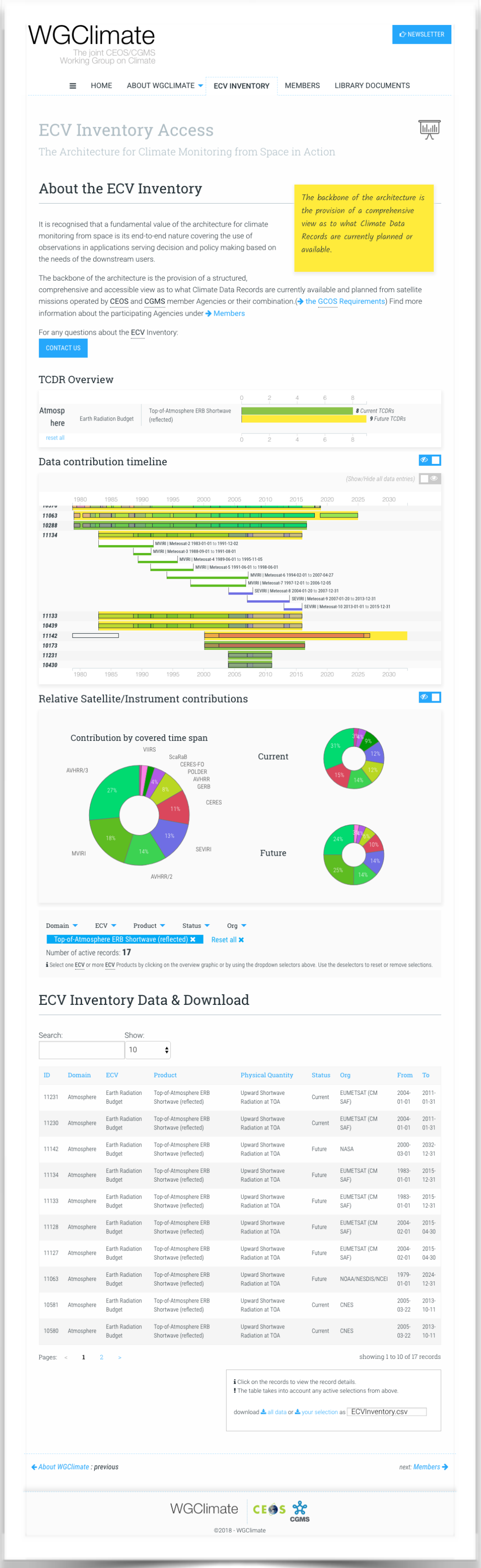
author: Katia Cardon - dot2dot

katia.d2d@gmail.com

for WGClimate at the request of ESA's Climate Change Initative

http://cci.esa.int/

Contents



ECV Inventory Access

The Architecture for Climate Monitoring from Space in Action

About the ECV Inventory

The backbone of the architecture is the provision of a comprehensive view as to what Climate Data Records are currently planned or available.

It is recognised that a fundamental value of the architecture for climate monitoring from space is its end-to-end nature covering the use of observations in applications serving decision and policy making based on the needs of the downstream users.

The backbone of the architecture is the provision of a structured, comprehensive and accessible view as to what Climate Data Records are currently available and planned from satellite missions operated by CEOS and CGMS member Agencies or their combination.(→ the GCOS Requirements) Find more information about the participating Agencies under → Members

For any questions about the ECV Inventory:

TCDR Overview

Data contribution timeline

(Show/Hide all data entries)
1980
1985
1990
1995
2000
2005
2010
2015
2020
2025
2030
11063
10288
11134
MVIRI | Meteosat-2 1983-01-01 to 1991-12-02
MVIRI | Meteosat-3 1988-09-01 to 1991-08-01
MVIRI | Meteosat-4 1989-06-01 to 1995-11-05
MVIRI | Meteosat-5 1991-06-01 to 1998-06-01
MVIRI | Meteosat-6 1994-02-01 to 2007-04-27
MVIRI | Meteosat-7 1997-12-01 to 2006-12-05
SEVIRI | Meteosat-8 2004-01-20 to 2007-12-31
SEVIRI | Meteosat-9 2007-01-20 to 2013-12-31
SEVIRI | Meteosat-10 2013-01-01 to 2015-12-31
11133
10439
11142
10173
11231
10430

Relative Satellite/Instrument contributions

Number of active records: **17**

ℹ Select one ECV or more ECV Products by clicking on the overview graphic or by using the dropdown selectors above. Use the deselectors to reset or remove selections.

ECV Inventory Data & Download

Search: Show: 10

ID	Domain	ECV	Product	Physical Quantity	Status	Org	From	To
11231	Atmosphere	Earth Radiation Budget	Top-of-Atmosphere ERB Shortwave (reflected)	Upward Shortwave Radiation at TOA	Current	EUMETSAT (CM SAF)	2004-01-01	2011-01-31
11230	Atmosphere	Earth Radiation Budget	Top-of-Atmosphere ERB Shortwave (reflected)	Upward Shortwave Radiation at TOA	Current	EUMETSAT (CM SAF)	2004-01-01	2011-01-31
11142	Atmosphere	Earth Radiation Budget	Top-of-Atmosphere ERB Shortwave (reflected)	Upward Shortwave Radiation at TOA	Future	NASA	2000-03-01	2032-12-31
11134	Atmosphere	Earth Radiation Budget	Top-of-Atmosphere ERB Shortwave (reflected)	Upward Shortwave Radiation at TOA	Future	EUMETSAT (CM SAF)	1983-01-01	2015-12-31
11133	Atmosphere	Earth Radiation Budget	Top-of-Atmosphere ERB Shortwave (reflected)	Upward Shortwave Radiation at TOA	Future	EUMETSAT (CM SAF)	1983-01-01	2015-12-31
11128	Atmosphere	Earth Radiation Budget	Top-of-Atmosphere ERB Shortwave (reflected)	Upward Shortwave Radiation at TOA	Future	EUMETSAT (CM SAF)	2004-02-01	2015-04-30
11127	Atmosphere	Earth Radiation Budget	Top-of-Atmosphere ERB Shortwave (reflected)	Upward Shortwave Radiation at TOA	Future	EUMETSAT (CM SAF)	2004-02-01	2015-04-30
11063	Atmosphere	Earth Radiation Budget	Top-of-Atmosphere ERB Shortwave (reflected)	Upward Shortwave Radiation at TOA	Future	NOAA/NESDIS/NCEI	1979-01-01	2024-12-31
10581	Atmosphere	Earth Radiation Budget	Top-of-Atmosphere ERB Shortwave (reflected)	Upward Shortwave Radiation at TOA	Current	CNES	2005-03-22	2013-10-11
10580	Atmosphere	Earth Radiation Budget	Top-of-Atmosphere ERB Shortwave (reflected)	Upward Shortwave Radiation at TOA	Current	CNES	2005-03-22	2013-10-11

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showing 1 to 10 of 17 records

ℹ Click on the records to view the record details.
! The table takes into account any active selections from above.

download all data or your selection as ECVInventory.csv

← About WGClimate : previous

next: Members →

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ECV Inventory page

This document is part of the Final Assets Pack (D-E5.2) and includes a detailed description of the functioning and integration of the interactive ECV graphics as used under the ‘ECV Inventory’ chapter on the WGClimate website.

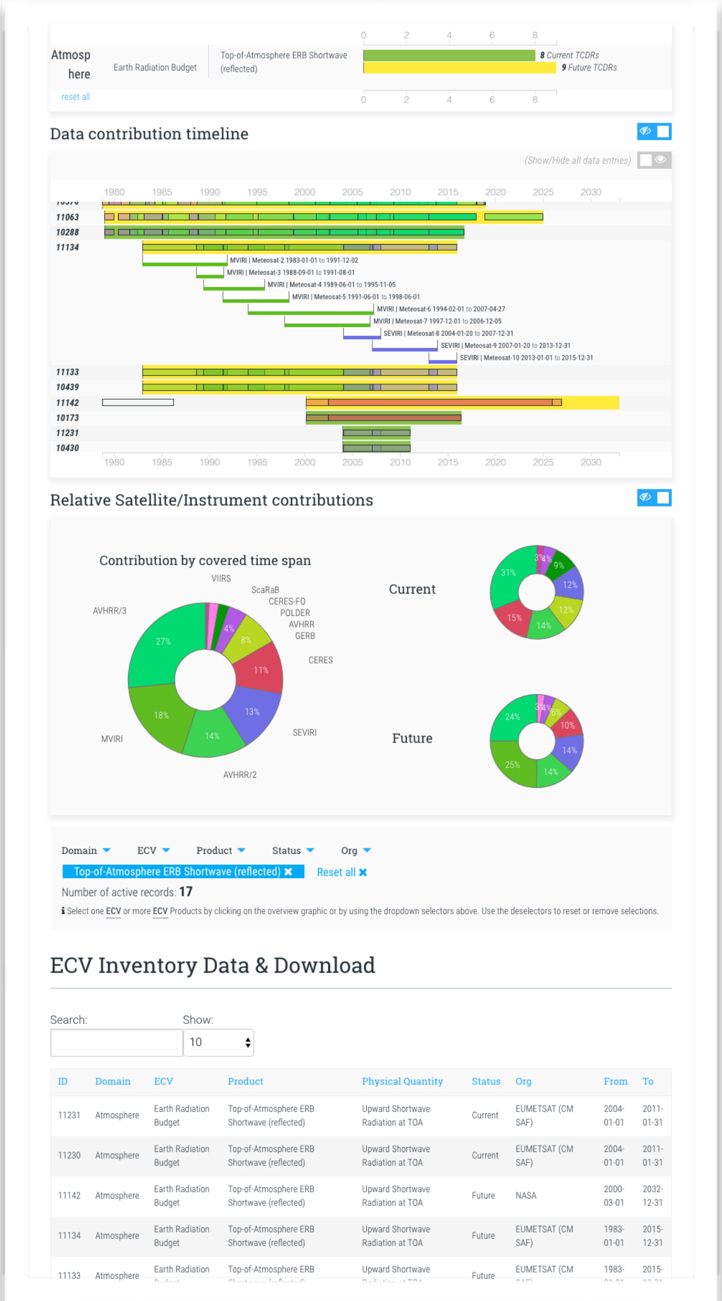
The document contains the following:

- description of the graphics
- description of the individual components
- description of the components functioning, code and dependencies
- demonstration of component integration

Table of Contents

1. ECV Graphics

1.1. Introduction


0
2
4
6
8
8 Current TCDRs
9 Future TCDRs
1980
1985
1990
1995
2000
2005
2010
2015
2020
2025
2030
11063
10288
11134
MVIRI | Meteosat-2 1983-01-01 to 1991-12-02
MVIRI | Meteosat-3 1988-09-01 to 1991-08-01
MVIRI | Meteosat-4 1989-06-01 to 1995-11-05
MVIRI | Meteosat-5 1991-06-01 to 1998-06-01
MVIRI | Meteosat-6 1994-02-01 to 2007-04-27
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SEVIRI | Meteosat-8 2004-01-20 to 2007-12-31
SEVIRI | Meteosat-9 2007-01-20 to 2013-12-31
SEVIRI | Meteosat-10 2013-01-01 to 2015-12-31
11133
10439
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10173
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Contribution by covered time span
VIIRS
ScaRaB
CERES-FO
POLDER
AVHRR
GERB
CERES
AVHRR/3
SEVIRI
MVIRI
AVHRR/2
27%
4%
8%
11%
13%
14%
18%
Current
31%
3%
4%
9%
12%
12%
14%
15%
Future
24%
10%
14%
14%
25%
Domain
ECV
Product
Status
Org

Atmosphere | Earth Radiation Budget | Top-of-Atmosphere ERB Shortwave (reflected)

reset all

Data contribution timeline

(Show/Hide all data entries)

Relative Satellite/Instrument contributions

Top-of-Atmosphere ERB Shortwave (reflected) ✖ Reset all ✖

Number of active records: **17**

ℹ Select one ECV or more ECV Products by clicking on the overview graphic or by using the dropdown selectors above. Use the deselectors to reset or remove selections.

ECV Inventory Data & Download

Search: Show: 10

ID	Domain	ECV	Product	Physical Quantity	Status	Org	From	To
11231	Atmosphere	Earth Radiation Budget	Top-of-Atmosphere ERB Shortwave (reflected)	Upward Shortwave Radiation at TOA	Current	EUMETSAT (CM SAF)	2004-01-01	2011-01-31
11230	Atmosphere	Earth Radiation Budget	Top-of-Atmosphere ERB Shortwave (reflected)	Upward Shortwave Radiation at TOA	Current	EUMETSAT (CM SAF)	2004-01-01	2011-01-31
11142	Atmosphere	Earth Radiation Budget	Top-of-Atmosphere ERB Shortwave (reflected)	Upward Shortwave Radiation at TOA	Future	NASA	2000-03-01	2032-12-31
11134	Atmosphere	Earth Radiation Budget	Top-of-Atmosphere ERB Shortwave (reflected)	Upward Shortwave Radiation at TOA	Future	EUMETSAT (CM SAF)	1983-01-01	2015-12-31
11133	Atmosphere	Earth Radiation	Top-of-Atmosphere ERB	Upward Shortwave	Future	EUMETSAT (CM	1983-	2015-

ECV Inventory page graphics

The WGClimate site uses interactive graphics under the ECV Inventory page.

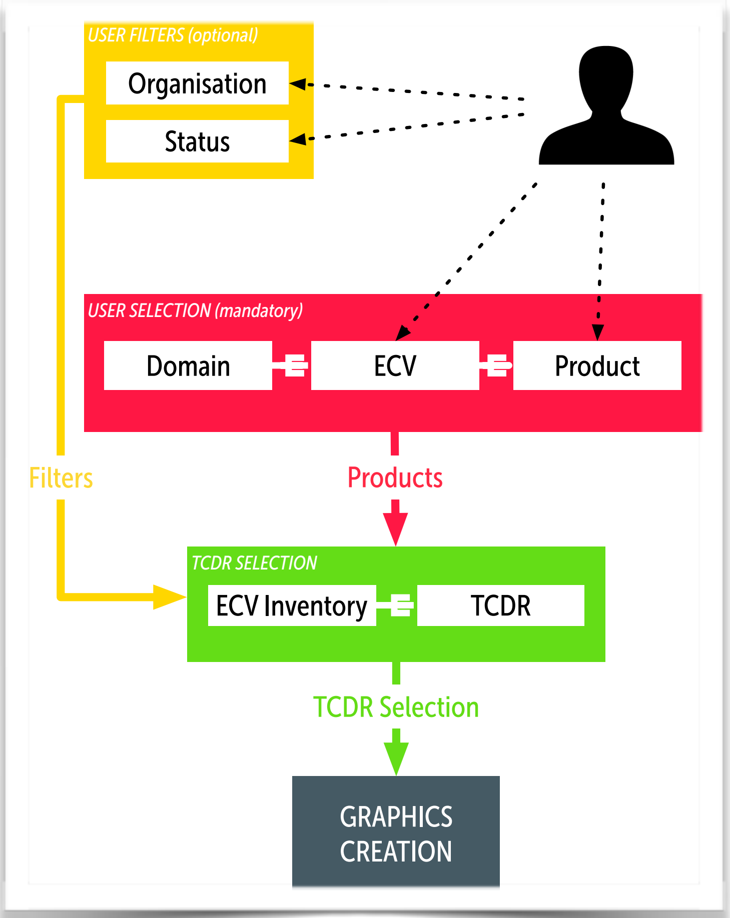
The main point of focus on this page is the ***ECV Inventory*** database. The ECV Inventory contains up to date information about ***Thematic Climate Data Records (TCDR)*** and their relation to the established ***Essential Climate Variables (ECV)***.

A ***Climate Data Record (CDR) is a series of observations over time that measures variables believed to be associated with climate variation and change.*** These changes may be small and occur over long time periods (seasonal, interannual, and decadal to centennial) compared to the short-term changes that are monitored for weather forecasting.

The term ***Thematic Climate Data Record (TCDR)*** is closely connected to the ECVs but ***strictly covers one geophysical variable, whereas an ECV can encompass several.***

The interactive visuals on the website allow the visitor to explore the Inventory and get a quick overview of the information available regarding the current and planned TCDR's. and their relation to the ECV's

1.2. Graphics creation



user interaction and graphic updates scheme

All graphics on the page, as well as the table view are driven by a set of hierarchical selectors and optional filters.

Selectors:

- Domain
- ECV
- Product

Available filters:

- Status
- Organisation

At least one selector is needed to create a TCDR subset from the ECV Inventory and ***trigger*** the creation of the ***graphics***. Each following user interaction will automatically update the active TCDR subset and graphics accordingly. The user can toggle selectors and filters via various sub-components, but ***all graphics*** on the page and ***data table use the underlying active TCDR subset*** as central data source, so any updates to the selectors or filters, will update the graphics and the data table., independent of where the action occurs on the page.

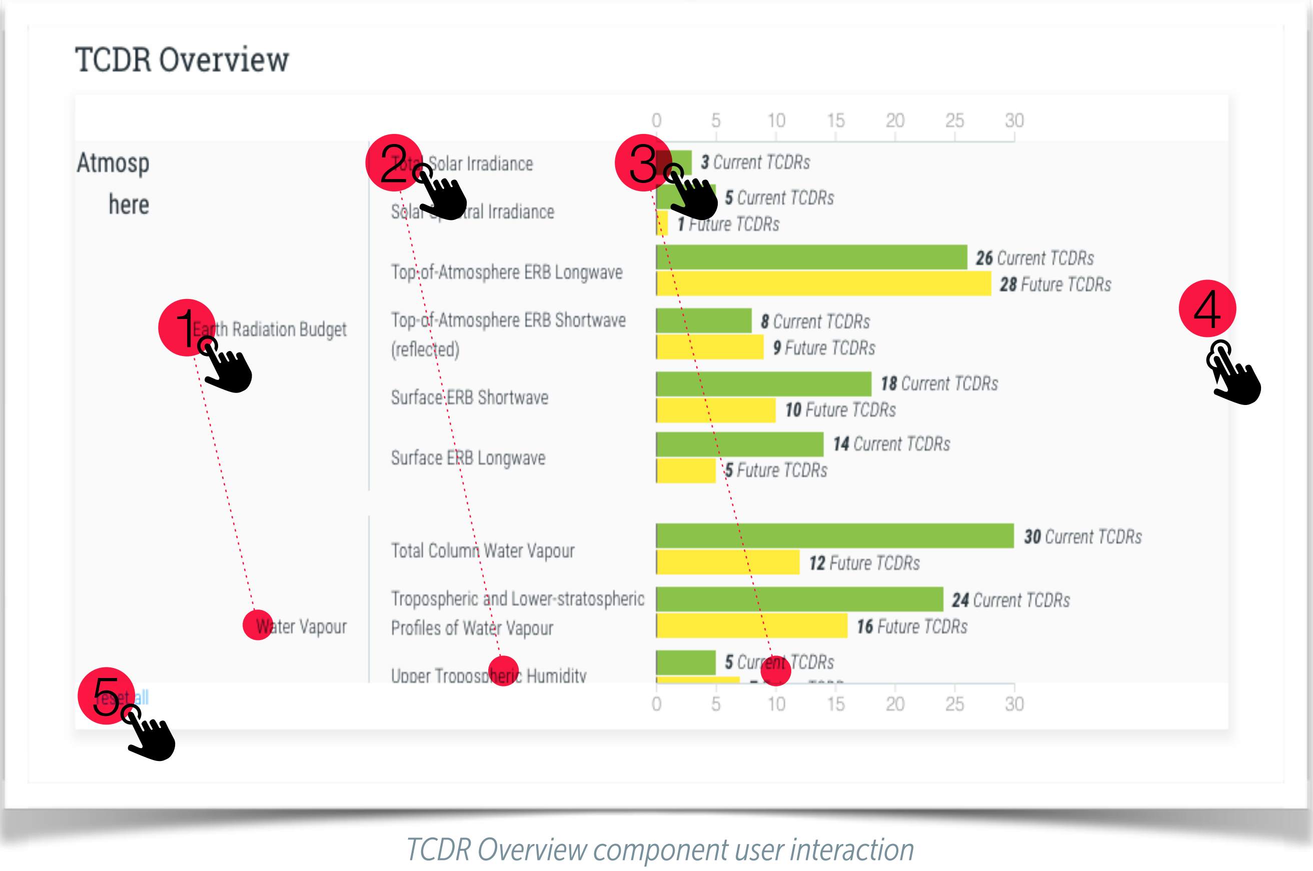
1.3. Selector Components

The ***selector components provide an interface to compose an active TCDR subset*** which will ***drive the graphic components and the data table***. It allows the enabling & disabling of all selectors and optional filtering parameters.

1.3.1. TCDR Overview component

This component gives an overview of all TCDR's in the ECV Inventory.

It shows the Domain, ECV and ECV Product's hierarchy and how many current and planned TCDR's are available for each group.

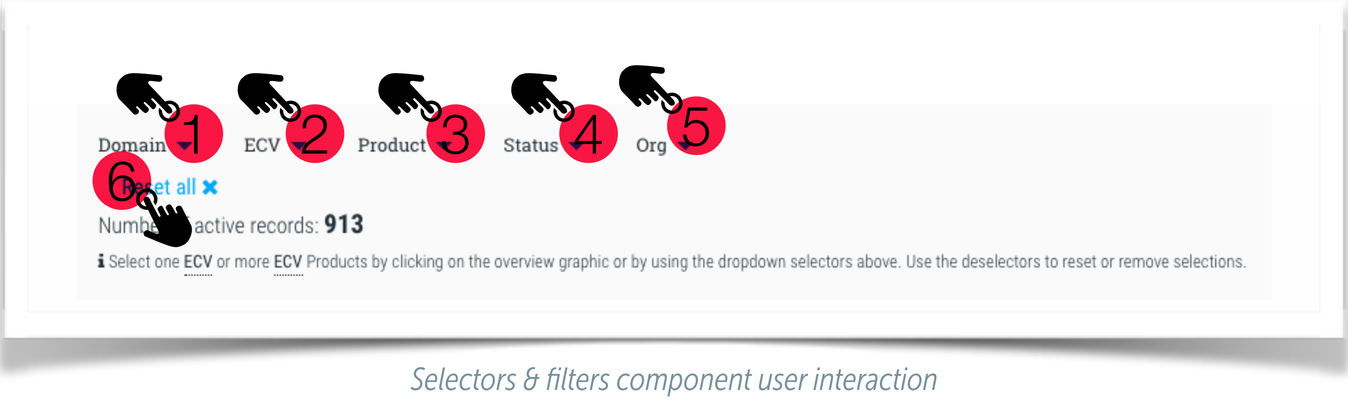


TCDR Overview component user interaction

1 - set ECV selector
2 - set ECV Product selector
3 - set ECV Product selector & status filter
4 - vertical scroll
5 - reset all selectors & filters

1.3.2. Selectors & Filters component

This component's goal is to provide an interface for enabling/disabling all possible selectors and filters.



Number active records: 913

ℹ Select one ECV or more ECV Products by clicking on the overview graphic or by using the dropdown selectors above. Use the deselectors to reset or remove selections.

Selectors & filters component user interaction

1 - set Domain selector
2 - set ECV selector
3 - set ECV Product selector
4 - set status filter
5 - set organisation filter
6 - reset all selectors & filters

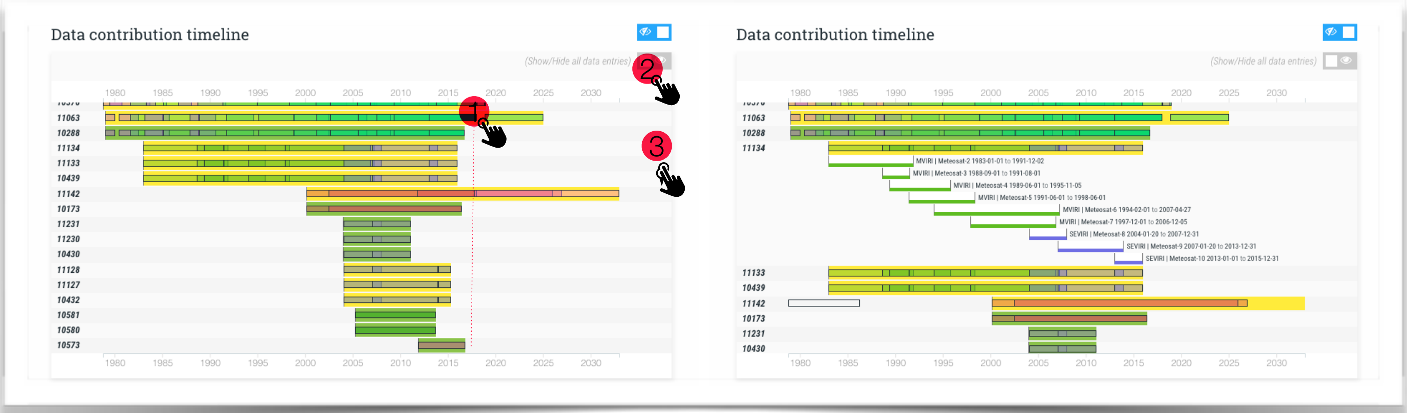
1.4. Graphic components

The main goal of the page is to allow the user to select and modify a TCDR subset and provide a ***quick visual impression about the TCDR subset*** regarding:

- which TCDR's are currently planned or available ?
- which timespan is covered ?
- how they the TCDR's composed ?
- who's responsible for the TCDR's ?

1.4.1. Data contribution component

This component shows all ***current & planned TCDR***'s timespans ***for the active TCDR subset.*** Clicking the rows provide a detailed views of the contributing instruments to the TCDR. Hovering the rows trigger popup information panels containing information about the TCDR, such as responsible organisation, geographical extent and temporal and spatial resolution.


Data contribution timeline
(Show/Hide all data entries)
1980
1985
1990
1995
2000
2005
2010
2015
2020
2025
2030
11063
10288
11134
11133
10439
11142
10173
11231
11230
10430
11128
11127
10432
10581
10580
10573
1
2
3
Data contribution timeline
(Show/Hide all data entries)
11063
10288
11134
MVIRI | Meteosat-2 1983-01-01 to 1991-12-02
MVIRI | Meteosat-3 1988-09-01 to 1991-08-01
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MVIRI | Meteosat-5 1991-06-01 to 1998-06-01
MVIRI | Meteosat-6 1994-02-01 to 2007-04-27
MVIRI | Meteosat-7 1997-12-01 to 2006-12-05
SEVIRI | Meteosat-8 2004-01-20 to 2007-12-31
SEVIRI | Meteosat-9 2007-01-20 to 2013-12-31
SEVIRI | Meteosat-10 2013-01-01 to 2015-12-31
11133
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10173
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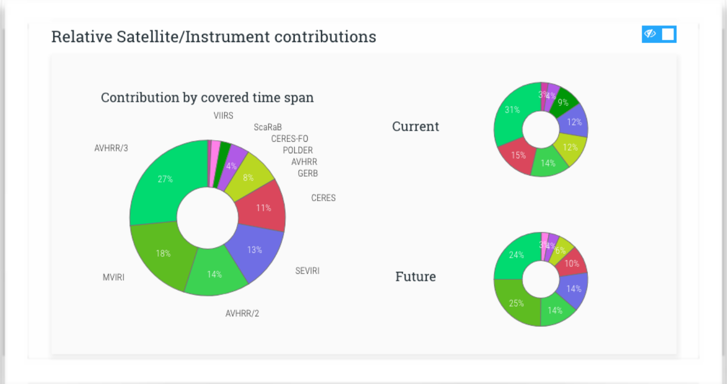
10430

Data contribution component user interaction (left) & expanded TCDR example (right)

1 - expand / collapse selected TCDR
2 - expand / collapse all TCDR's
3 - vertical scroll

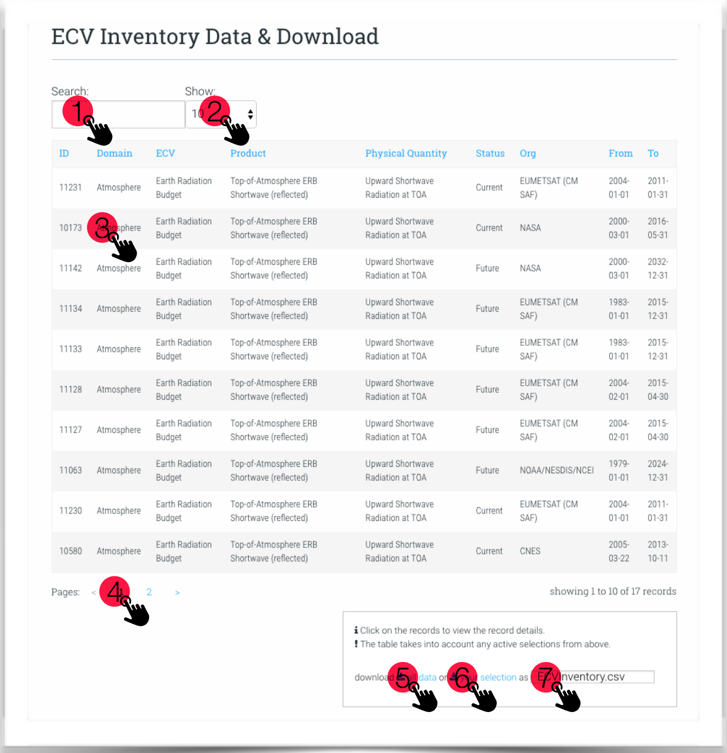
1.4.2. Relative Satellite/Instrument contribution component



Relative Instrument contributions to the TCDR subset

This component shows the relative contribution to the TCDR subset by instrument. The proportions represent the ratios of the duration of the whole TCDR subset and the duration of the observations for each contributing instrument.

1.4.3. ECV Inventory Data & Download component



ECV Inventory Data & Download

Search:

Show: 10

ID	Domain	ECV	Product	Physical Quantity	Status	Org	From	To
11231	Atmosphere	Earth Radiation Budget	Top-of-Atmosphere ERB Shortwave (reflected)	Upward Shortwave Radiation at TOA	Current	EUMETSAT (CM SAF)	2004-01-01	2011-01-31
10173	Atmosphere	Earth Radiation Budget	Top-of-Atmosphere ERB Shortwave (reflected)	Upward Shortwave Radiation at TOA	Current	NASA	2000-03-01	2016-05-31
11142	Atmosphere	Earth Radiation Budget	Top-of-Atmosphere ERB Shortwave (reflected)	Upward Shortwave Radiation at TOA	Future	NASA	2000-03-01	2032-12-31
11134	Atmosphere	Earth Radiation Budget	Top-of-Atmosphere ERB Shortwave (reflected)	Upward Shortwave Radiation at TOA	Future	EUMETSAT (CM SAF)	1983-01-01	2015-12-31
11133	Atmosphere	Earth Radiation Budget	Top-of-Atmosphere ERB Shortwave (reflected)	Upward Shortwave Radiation at TOA	Future	EUMETSAT (CM SAF)	1983-01-01	2015-12-31
11128	Atmosphere	Earth Radiation Budget	Top-of-Atmosphere ERB Shortwave (reflected)	Upward Shortwave Radiation at TOA	Future	EUMETSAT (CM SAF)	2004-02-01	2015-04-30
11127	Atmosphere	Earth Radiation Budget	Top-of-Atmosphere ERB Shortwave (reflected)	Upward Shortwave Radiation at TOA	Future	EUMETSAT (CM SAF)	2004-02-01	2015-04-30
11063	Atmosphere	Earth Radiation Budget	Top-of-Atmosphere ERB Shortwave (reflected)	Upward Shortwave Radiation at TOA	Future	NOAA/NESDIS/NCEI	1979-01-01	2024-12-31
11230	Atmosphere	Earth Radiation Budget	Top-of-Atmosphere ERB Shortwave (reflected)	Upward Shortwave Radiation at TOA	Current	EUMETSAT (CM SAF)	2004-01-01	2011-01-31
10580	Atmosphere	Earth Radiation Budget	Top-of-Atmosphere ERB Shortwave (reflected)	Upward Shortwave Radiation at TOA	Current	CNES	2005-03-22	2013-10-11

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showing 1 to 10 of 17 records

ℹ Click on the records to view the record details.

! The table takes into account any active selections from above.

download all data or your selection as ECVInventory.csv

ECV Inventory & Download

This component allows the user to download the full ECV Inventory data or a subset corresponding to the active TCDR subset, and to view the full TCDR record details.

1 - free text search

2 - number of records displayed per page

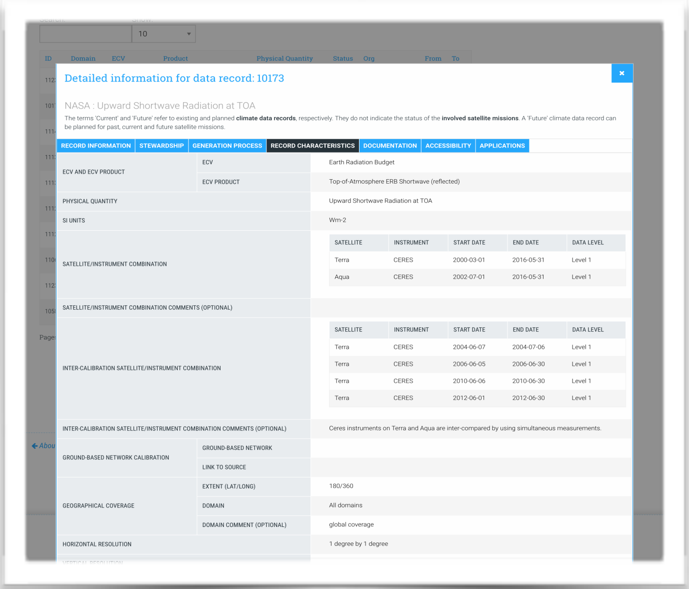
3 - trigger detailed record view

4 - table page selector

5 - download full ECV Inventory

6 - download TCDR subset

7 - filename input for



Detailed information for data record: 10173

NASA : Upward Shortwave Radiation at TOA

The terms 'Current' and 'Future' refer to existing and planned **climate data records**, respectively. They do not indicate the status of the **involved satellite missions**. A 'Future' climate data record can be planned for past, current and future satellite missions.

ECV AND ECV PRODUCT	ECV	Earth Radiation Budget
	ECV PRODUCT	Top-of-Atmosphere ERB Shortwave (reflected)
PHYSICAL QUANTITY		Upward Shortwave Radiation at TOA
SI UNITS		Wm-2
SATELLITE/INSTRUMENT COMBINATION		

SATELLITE	INSTRUMENT	START DATE	END DATE	DATA LEVEL
Terra	CERES	2000-03-01	2016-05-31	Level 1
Aqua	CERES	2002-07-01	2016-05-31	Level 1

SATELLITE/INSTRUMENT COMBINATION COMMENTS (OPTIONAL)		
INTER-CALIBRATION SATELLITE/INSTRUMENT COMBINATION		

SATELLITE	INSTRUMENT	START DATE	END DATE	DATA LEVEL
Terra	CERES	2004-06-07	2004-07-06	Level 1
Terra	CERES	2006-06-05	2006-06-30	Level 1
Terra	CERES	2010-06-06	2010-06-30	Level 1
Terra	CERES	2012-06-01	2012-06-30	Level 1

INTER-CALIBRATION SATELLITE/INSTRUMENT COMBINATION COMMENTS (OPTIONAL)		Ceres instruments on Terra and Aqua are inter-compared by using simultaneous measurements.
GROUND-BASED NETWORK CALIBRATION	GROUND-BASED NETWORK	
	LINK TO SOURCE	
GEOGRAPHICAL COVERAGE	EXTENT (LAT/LONG)	180/360
	DOMAIN	All domains
	DOMAIN COMMENT (OPTIONAL)	global coverage
HORIZONTAL RESOLUTION		1 degree by 1 degree

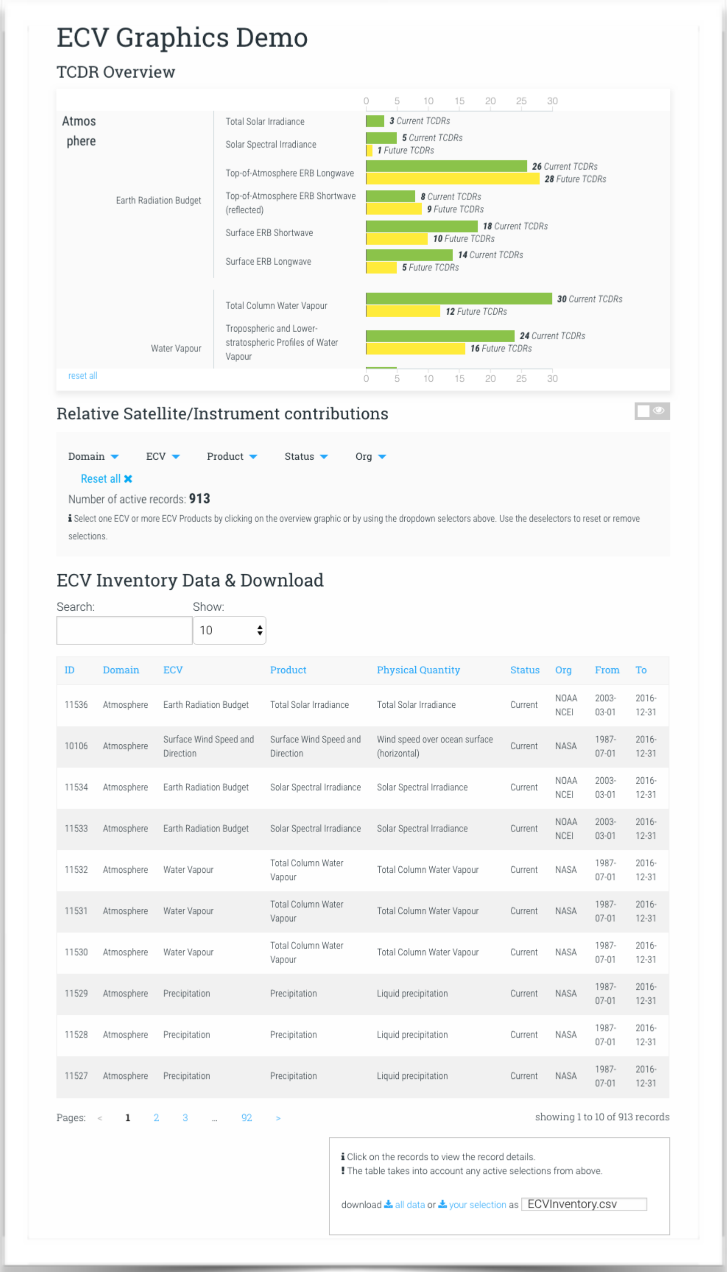
detailed TCDR record view

2. Development

This chapter will describe ***how the ECV graphics are build and how they can modified***.

For this purpose ***all code related to the ECV graphics*** only has been extracted into a ***demo application*** . The demo application uses html and javascript, and runs on any local or remote web server.

2.1. Demo application



ECV Graphics Demo

TCDR Overview

Relative Satellite/Instrument contributions

Number of active records: **913**

ℹ Select one ECV or more ECV Products by clicking on the overview graphic or by using the dropdown selectors above. Use the deselectors to reset or remove selections.

ECV Inventory Data & Download

Search:

Show: 10

ID	Domain	ECV	Product	Physical Quantity	Status	Org	From	To
11536	Atmosphere	Earth Radiation Budget	Total Solar Irradiance	Total Solar Irradiance	Current	NOAA NCEI	2003-03-01	2016-12-31
10106	Atmosphere	Surface Wind Speed and Direction	Surface Wind Speed and Direction	Wind speed over ocean surface (horizontal)	Current	NASA	1987-07-01	2016-12-31
11534	Atmosphere	Earth Radiation Budget	Solar Spectral Irradiance	Solar Spectral Irradiance	Current	NOAA NCEI	2003-03-01	2016-12-31
11533	Atmosphere	Earth Radiation Budget	Solar Spectral Irradiance	Solar Spectral Irradiance	Current	NOAA NCEI	2003-03-01	2016-12-31
11532	Atmosphere	Water Vapour	Total Column Water Vapour	Total Column Water Vapour	Current	NASA	1987-07-01	2016-12-31
11531	Atmosphere	Water Vapour	Total Column Water Vapour	Total Column Water Vapour	Current	NASA	1987-07-01	2016-12-31
11530	Atmosphere	Water Vapour	Total Column Water Vapour	Total Column Water Vapour	Current	NASA	1987-07-01	2016-12-31
11529	Atmosphere	Precipitation	Precipitation	Liquid precipitation	Current	NASA	1987-07-01	2016-12-31
11528	Atmosphere	Precipitation	Precipitation	Liquid precipitation	Current	NASA	1987-07-01	2016-12-31
11527	Atmosphere	Precipitation	Precipitation	Liquid precipitation	Current	NASA	1987-07-01	2016-12-31

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showing 1 to 10 of 913 records

ℹ Click on the records to view the record details.
! The table takes into account any active selections from above.

download all data or your selection as ECVInventory.csv

demo application

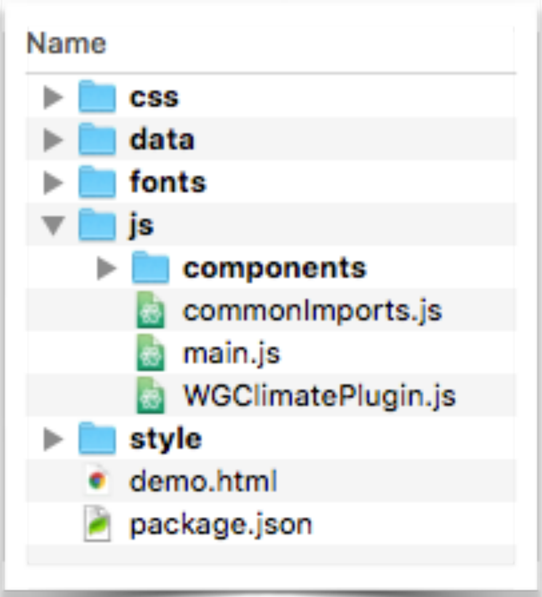
The application requires a HTTP server to open the root document **'demo.html'** correctly.

Opening the files locally in a browser without the use of a HTTP server will give connection errors.

Connections to the ECV database hosted at Eumetsat are only possible when using a HTTP server, local or remote.

Opening **'demo.html'** via a webserver should display a fully functional page similar to the ECV Inventory page on the website, but without the surrounding site headers and footers containing the menus, logos, etc ...

2.2. The directory tree



```
Name
▶ css
▶ data
▶ fonts
▼ js
    ▶ components
      commonImports.js
      main.js
      WGClimatePlugin.js
▶ style
  demo.html
  package.json
```

folder structure before installation

After installation, the application folder contains ***all files*** required for further ***development*** or ***any modifications***. The files can be edited directly and changes will be reflected on the HTTP server.

If the directory structure may be altered during installation. It is not advisable to manually change paths as this will most likely result in errors when bundling for production in the last stage.

After development, this ***application should be bundled ('compiled') into a production version for online hosting***..

Nodejs is required to package and bundle this version

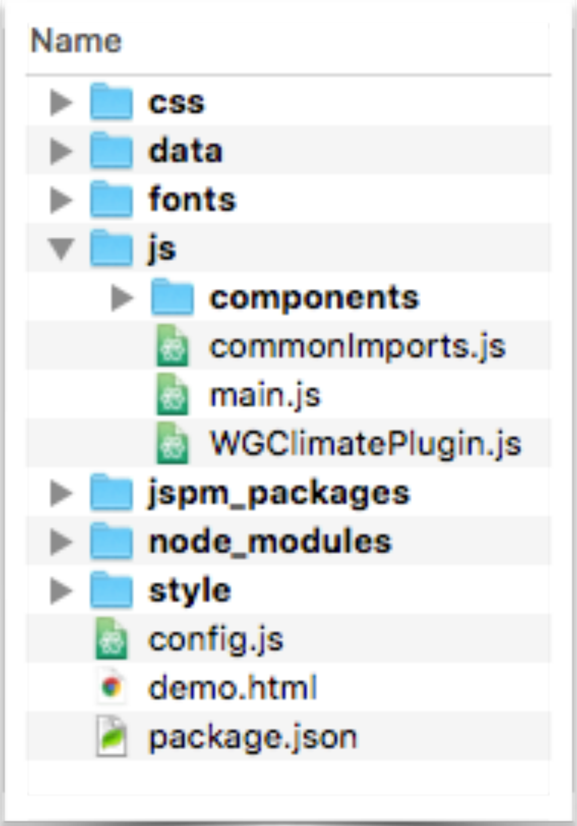
2.3. Installation

● Install Nodejs

Nodejs should be installed on the development machine. Node.js® is a JavaScript runtime built on Chrome's V8 JavaScript engine. It is available for all operating systems, and the ***Nodejs download page*** provides pre-built installers for any platform.

● Install the demo

Open a Command Terminal in the root folder, and execute the following commands:



```
Name
▶ css
▶ data
▶ fonts
▼ js
    ▶ components
      commonImports.js
      main.js
      WGClimatePlugin.js
▶ jspm_packages
▶ node_modules
▶ style
  config.js
  demo.html
  package.json
```

folder structure after installation

```
> npm install

> jspm install
> Configuration file config.js doesn't exist, create it? [yes]:
yes
```

Recommended optional installations

Install Vue.js devtools extension

The custom components for the graphics have been built using ***Vue.js***, a progressive javascript framework. If code concerning the Vue components is going to be altered, the developer extension for chrome provides a good development & debugging environment as a browser extension.

The extension can be downloaded ***here***

SASS (Syntactically Awesome Style Sheets) compiler

The ECV graphics' style sheets based on rely on ***Foundation***, a responsive front-end framework for layout and styling. If stylesheets for the graphics are to be altered, they can be edited via the source style sheets written in sass. SASS style sheets are easy to understand and maintain.

The original styles are defined in the **'style'** folder. The SASS files are combined and compiled to a plain CSS file in the **'css'** folder.

A myriad of SASS compilers are available. One good, free option is the Easy Sass extension available for the ***Visual Studio Code editor.***, which will automatically compile sass to css on file save.

More information about SASS is available ***here***.

2.4. Minimal HTML boilerplate

The ECV graphic components are custom Html components and can be integrated by using an html tag in the body of any html page. This is the syntax of **`demo.html`**:

```
<head>
    <title>ECV Graphics demo</title>
    <link rel="stylesheet" href="css/ecvgraphics_demo.min.css">
</head>
<body>
    <main id="main-page" class=“container">
        <h1>ECV Graphics Demo</h1>

       <ecv-dashboard></ecv-dashboard>

    </main>

    <script src="jspm_packages/system.js"></script>
    <script src=“config.js"></script>

    <script>
        System.import('js/main.js');
    </script>

</body>
```

Minimal steps for the integration of the ECV graphics:

- link to the ***external stylesheet***

```
     <link rel="stylesheet" href="css/ecvgraphics_demo.min.css">
```

- set the root component for Vue.js (***id=“main-page”)***

```
     <main id="main-page" class=“container">
```

- add the ECV graphics component to the root component (***<ecv-dashboard></ecv-dashboard>)***

```
         <ecv-dashboard></ecv-dashboard>
```

- include javascript files.

```
    <script src="jspm_packages/system.js"></script>
    <script src=“config.js"></script>

    <script>
        System.import('js/main.js');
    </script>
```

2.5. Dependencies

The custom components for the graphics have been built using ***Vue.js***, a progressive javascript framework and rely on ***Foundation***, a responsive front-end framework for layout and styling.

All javascript dependencies and code are managed, packaged and bundled using ***jspm***, which allows the use of modern ES modules.

Additional Javascript libraries can be installed from the jspm Registry, GitHub or npm as follows:

```
> jspm install npm:lodash-node

> jspm install github:components/jquery

> jspm install jquery

> jspm install myname=npm:underscore
```

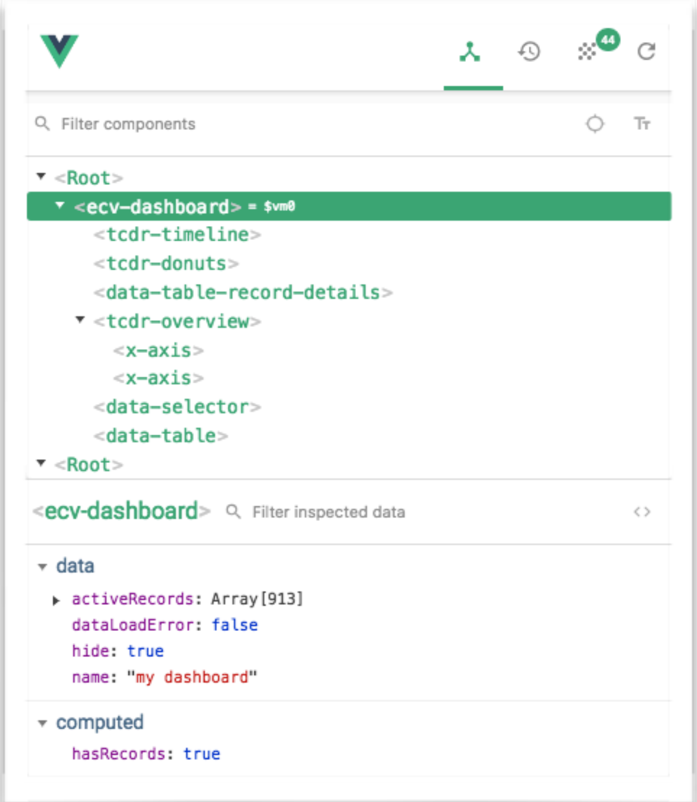
The installed modules can be imported into the javascript code as follows:

```
> import _ from 'lodash-node/modern/lang/isEqual.js';

> import $ from 'jquery';

> import underscore from 'myname';
```

2.6. Vue Components



```
Filter components

▾ <Root>
  ▾ <ecv-dashboard> = $vm0
      <tcdr-timeline>
      <tcdr-donuts>
      <data-table-record-details>
    ▾ <tcdr-overview>
        <x-axis>
        <x-axis>
      <data-selector>
      <data-table>
▾ <Root>

<ecv-dashboard>   Filter inspected data

▾ data
  ▸ activeRecords: Array[913]
    dataLoadError: false
    hide: true
    name: "my dashboard"
▾ computed
    hasRecords: true
```

Vuejs devtool inspector extension in the browser

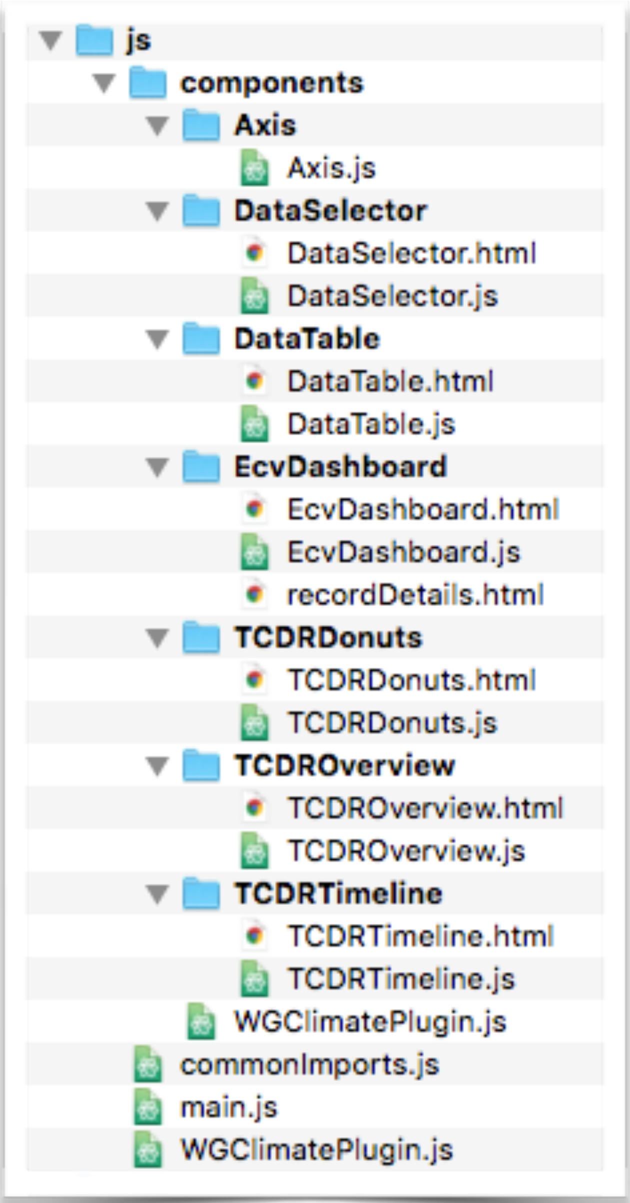
The folder names are similar to the component names, so they can easily be traced.

All components need to be registered in Vuejs via a javascript declaration containing their code, functions, data and life cycle hooks.

Each component also needs a template, which is bound to the component's functions and data. The template may be split into a separate HTML file.

The ECV graphics are Vue.js components. The ecv-dashboard component is the base component for all other components. It serves as a central data holder, event dispatcher and allows child component communication.

The component sources are located under `> js > components`



```
▾ js
  ▾ components
    ▾ Axis
        Axis.js
    ▾ DataSelector
        DataSelector.html
        DataSelector.js
    ▾ DataTable
        DataTable.html
        DataTable.js
    ▾ EcvDashboard
        EcvDashboard.html
        EcvDashboard.js
        recordDetails.html
    ▾ TCDRDonuts
        TCDRDonuts.html
        TCDRDonuts.js
    ▾ TCDROverview
        TCDROverview.html
        TCDROverview.js
    ▾ TCDRTimeline
        TCDRTimeline.html
        TCDRTimeline.js
      WGClimatePlugin.js
    commonImports.js
    main.js
    WGClimatePlugin.js
```

2.7. Code execution flow

This section describes the main steps of the code execution in order to render the page.

- execute **`js/main.js`**
    - import common javascript modules & libraries
    - set imported modules and libraries as global variables
    - register the eco-dashboard component
    - setup Foundation framework
    - configure Vue
    - register event dispatcher system for Vue
    - register global component functions and variables for Vue
    - create Vue root component
- render **`<ecv-dashboard>`** tag
    - register ecv-dashboard child components (data-selector, data-table, tcdr-overview, tcr-donuts)
    - import ecv-dashboard html template ,
    - import column names for data table export (not all data read from the ECV database should be exported to excel files)
    - import lookuptable for the ECV database 'organisation' column (the names are often written slightly different, this lookup table is used to convert the 'organisation' column fields into a more coherent field set)
    - set base URL's that will provide the connection to the ECV database at Eumetsat (selection parameters are added later to retrieve the requested data)
    - set URL for downloading the whole ECV database
    - define table field labels, original column name in the ECV database, and wether they are selectors

- define event dispatching and triggers for the ecv-dashboard and child components

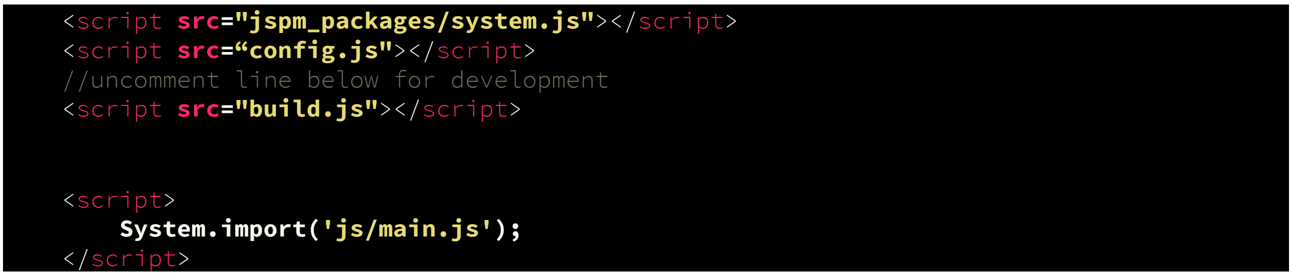
- load the data from the ECV database and trigger update events when ready

2.8. Bundle code for production

After development and alteration of the code, the code should be bundled for production. The bundling is done using jspm,. In a terminal from the root directory execute:

```
> jspm bundle js/main build.js
```

Then add the build.js to the html page.



```
<script src="jspm_packages/system.js"></script>
<script src=“config.js"></script>
//uncomment line below for development
<script src="build.js"></script>


<script>
    System.import('js/main.js');
</script>
```

2.9. External open source javascript libraries used

The demo application makes extensive use of existing open source ljavascript libraries and modules. All used public libraries are listed here.

- **`dynatable`** - A more-fun, semantic, alternative to datatables - version 0.3.1

  http://www.dynatable.com & *https://github.com/alfajango/jquery-dynatable*

- **`benkeen/d3pie`** - A configurable pie chart lib and generator built on d3.js - version 0.2.1"

  http://d3pie.org & *https://github.com/benkeen/d3pie*

- **`components/handlebars.js`** - Shim repository for Handlebars.js - version 4.0.11

https://github.com/wycats/handlebars.js/ & https://github.com/components/handlebars.js/

- **`crossfilter`** - Fast n-dimensional filtering and grouping of records. - version 1.3.12

https://github.com/square/crossfilter

- **`d3`** - Bring data to life with SVG, Canvas and HTML. - version 4.11.0

https://d3js.org & https://github.com/d3/d3

- **`dc`** - Multi-Dimensional charting built to work natively with crossfilter rendered with d3.js - version 2.1.8

https://github.com/dc-js/dc.js

- **`foundation-sites`** - The most advanced responsive front-end framework in the world. Quickly create prototypes and production code for sites that work on any kind of device. - version 6.4.4-rc1

http://foundation.zurb.com & https://github.com/zurb/foundation-sites

- **`gka/chroma.js`** -JavaScript library for all kinds of color manipulations - version 1.3.3

http://gka.github.io/chroma.js & https://github.com/gka/chroma.js/

- **`hbs`** - Handlebars template loader plugin for SystemJS - version 1.2.3

https://github.com/davis/plugin-hbs

- **`query`** - jQuery JavaScript Library version 3.2.1

https://jquery.com/ & https://github.com/jquery/jquery

- **`json`** - JSON loader plugin - version 0.3.0

https://github.com/systemjs/plugin-json

- **`moment`** - Parse, validate, manipulate, and display dates in javascript. - version 2.18.1

http://momentjs.com & https://github.com/moment/moment

- `systemjs/plugin-text` - Text plugin - version 0.0.11

https://github.com/systemjs/plugin-text

- `tsv` - plugin for tsk files - version master

https://github.com/wpf500/plugin-tsv

- `underscore` - JavaScript's utility _ belt - version 1.8.3

http://underscorejs.org & https://github.com/jashkenas/underscore

- `vue` - A progressive, incrementally-adoptable JavaScript framework for building UI on the web.- version 2.4.4

http://vuejs.org & https://github.com/vuejs/vue

- `vue-bus` - A event bus for Vue.js - version 1.0.0

https://github.com/yangmingshan/vue-bus