
Wave Analytics Extended Metadata (XMD) Reference

Salesforce, Winter '17



CONTENTS

- Extended Metadata (XMD) Overview 1
- Extended Metadata (XMD) Reference 6

EXTENDED METADATA (XMD) OVERVIEW

Extended metadata (XMD) enables you to customize the formatting of dashboard elements in Wave Analytics.

If you modify the XMD for a dataset, every UI visualization that uses the dataset uses the new formatting. You can control the following:

- The formatting of measures
- Display labels for dimensions and measures
- The grouping of dimensions of measures
- Colors of specific fields
- Default columns to be displayed for a values table
- The hiding of dimensions and measures in the user interface
- Custom menus that let users take advantage of actions on Salesforce objects and follow links to records in Salesforce and external websites
- Mapping of Salesforce org IDs to their URLs so that a link to a Salesforce record from a multi-org dataset resolves to the correct org instance for that record

The XMD file is in JSON format. To access the XMD file, edit the corresponding dataset. You can download the existing XMD file from the Edit page.



Note: Save XMD files in UTF-8 format to be sure that Wave visualizations display international characters.

Refer to the [XMD 2.0 section](#) for information about XMD changes and updates.

Extended Metadata Example

The following example illustrates the format of the XMD file.



Note: Every dimension and measure that's referenced must be valid. Otherwise the reference is ignored.

```
{
  "formats": {
    "measures": {
      "Amount": [
        "$#,##0.00",
        1
      ]
    }
  },
  "hide_dimensions": [
    "Owner-Email"
  ],
  "labels": {
    "dimensions": {
      "CloseDate": "Close Date GMT",
      "CloseDate_Day": "Close Date Day",
      "CloseDate_Month": "Close Date Month",
      "CloseDate_Quarter": "Close Date Quarter",
    }
  }
}
```

```

        "CloseDate_Week": "Close Date Week",
        "CloseDate_Year": "Close Date Year",
        "CreatedDate": "Created Date GMT",
        "CreatedDate_Day": "Created Date Day",
        "CreatedDate_Month": "Created Date Month",
        "CreatedDate_Quarter": "Created Date Quarter",
        "CreatedDate_Week": "Created Date Week",
        "CreatedDate_Year": "Created Date Year",
        "Id": "Id",
        "OpportunityId": "Opportunity Id",
        "StageName": "Opp Stage"
    },
    "measures": {
        "Amount": "Total Amount"
    },
    "keys": {
        "IsClosed": {
            "true": "Closed",
            "false": "Open"
        },
        "Outcome": {
            "true": "Won",
            "false": "Lost"
        },
        "Region": {
            "EU": "Europe",
            "AP": "Asia Pacific",
            "US": "United States"
        }
    }
},
"types": {
    "Close Date GMT": {
        "dims": {
            "day": "CloseDate_Day",
            "fullField": "CloseDate",
            "month": "CloseDate_Month",
            "quarter": "CloseDate_Quarter",
            "week": "CloseDate_Week",
            "year": "CloseDate_Year"
        },
        "meas": {
            "epoch_day": "CloseDate_day_epoch",
            "epoch_second": "CloseDate_sec_epoch"
        },
        "type": "date"
    },
    "Created Date GMT": {
        "dims": {
            "day": "CreatedDate_Day",
            "fullField": "CreatedDate",
            "month": "CreatedDate_Month",
            "quarter": "CreatedDate_Quarter",
            "week": "CreatedDate_Week",

```

```

        "year": "CreateDate_Year"
    },
    "meas": {
        "epoch_day": "CreateDate_day_epoch",
        "epoch_second": "CreateDate_sec_epoch"
    },
    "type": "date"
}
},
"colors": {
    "StageName": {
        "5 - Closed-Won": "#4f4",
        "5 - Closed-Lost": "#f44"
    }
},
"Region": {
    "AP": "#fc6",
    "EU": "#48f",
    "US": "#f88"
}
},
"values_query_columns": [
    "Id",
    "OpportunityId",
    "StageName"
]
}

```

XMD 2.0


Some XMD elements have changed, as have some behaviors. In Salesforce development circles these changes are referred to as XMD 2.0, versus XMD 1.1.

Behind the scenes, a key change is that XMD is now stored in BPOs (Base Platform Objects) rather than in JSON files. The API works on these objects, so you can use the [XMD API endpoints](#) to manipulate your XMD directly.

From the user perspective, you still download and upload JSON files to effect your changes—the XMD is converted on-the-fly. However, there are some side effects of this change:



- XMD is stored for each dataset version.
- `system` XMD is generated when `main.json` is uploaded, or when a GET call is made via the API on an old-version dataflow.

As before, `main` type XMD is created by merging `system` and `user`. Modify the `user` XMD file to customize the formatting of many dashboard elements in Wave Analytics.

 **Warning:** If dataset metadata is changed—like a particular column is deleted or renamed as a result of changes to the dataflow—the associated user XMD must also be updated, so it doesn't continue to reference the changed column and cause validation to fail. Once the XMD has been updated, it must be reloaded (i.e. downloaded then uploaded) in order to pass validation. This must be done even if the changes to the dataflow are reverted.

What Does This Mean To Me?

This table describes changes to XMD elements. While most of these changes are new elements, several are existing elements that are renamed. Please update your XMD if you use these elements.

Element	Next-level element	Next-level element	Type	Note
dimensions	description		String	New. The description of the dimension.
	fullyQualified Name		String	New. The fully qualified name of the dimension.
	origin		String	New. The origin of this dimension.
	dateFormat		String	New. Use to display an easily readable date.
	isMultiValue		Boolean	New. Indicates whether the dimension is multi-value.
	imageTemplate		String	New. The name of the image template.
	customActions Enabled		Boolean	New. Indicates whether the dimension has custom actions enabled.
	customActions		List	New. Custom actions linked to this dimension.
		name	String	New. The name of the action.
		url	String	New. The Url for the action.
		icon	String	New. The icon for the action.
		tooltip	String	New. The tooltip for the action.
		target	String	New. The target for the action.
		method	String	New. The method for the action.
		enabled	Boolean	New. Indicates whether the action is enabled for a specific dimension.
	sfdcActions		List	Renamed to salesforceActions.  Note: <ul style="list-style-type: none"> The user interface still uses XMD 1.1, while the API uses XMD 2.0. Only use the renamed element name if using XMD 2.0. The new <code>enabled</code> flag in the <code>salesforceActions</code> list is a placeholder in XMD 2.0, reserved for future use.
	sfdcActions Enabled		Boolean	Renamed to salesforceActionsEnabled.  Note: The user interface still uses XMD 1.1, while the API uses XMD 2.0. Only use the renamed element name if using XMD 2.0.
measures	description		String	New. The description of the measure.
	fullyQualified Name		String	New. The fully qualified name of the measure.
	origin		String	New. The origin of the measure.
	dateFormat		String	New. The format used for a date that is a measure.

Extended Metadata (XMD) Overview

Element	Next-level element	Next-level element	Type	Note
	format		List	Existing.
		prefix	String	New. The prefix placed before the field value.
		unit	String	New. The unit string for the measure. For example, 'cm'.
		suffix	String	New. The suffix placed after the field value.
		decimal Digits	Integer	New. The number of digits displayed after the decimal place.
		negative Parens	Boolean	New. Indicates whether to display negative numbers in parentheses, rather than with a minus sign.
		unit Multiplier	Double	New. The multiplier for the unit.
dates	label		String	New. Label of the Date column.
	compact		Boolean	New. Whether the Date is displayed as compact.
	description		String	New. Description of the Date column.
	showInExplorer		Boolean	New. Whether the Date is shown in the explorer.
	fiscalMonth Offset		Integer	New. Offset number of months for the fiscal year in relation to the calendar year.
	isYearEndFiscal Year		Boolean	New. Whether the Year End is the Fiscal year.
	firstDayOfWeek		Integer	New. What to use as the first day of the week.
dataset	connector		String	New. Connector source for the dataset.
	fullyQualified Name		String	New. Fully qualified name of the dataset version.
	origin		String	New. Origin representing where this dataset version comes from.
	description		String	New. Description of the dataset.

EXTENDED METADATA (XMD) REFERENCE

Modify the XMD file to customize the formatting of many dashboard elements in Wave Analytics.

Refer to the [XMD 2.0](#) section for information about XMD changes and updates.

Formats Section

The formats section of the extended metadata file allows you to specify a format and multiplier for measures. The following example shows code for specifying a format string and a multiplier of 1 for the Amount measure:

```
"formats": {
  "measures": {
    "Amount": [
      "$#,##0.00",
      1
    ]
  }
}
```

For more information about numeric formatting, see “Numeric Formats” in the [Wave Analytics External Data Format Reference](#).

Labels Section

The labels section of the extended metadata file allows you to provide a display label for the following elements.

- Dimension: Maps the dimension API name to a display label.
- Measure: Maps the measure API name to a display label.
- Measure filter: Specifies display labels to be used when the dashboard is showing a range for a measure. To use a shorter name than the one that is defined in the measures section, set the measure filter.
- Key: Specifies display labels for dimension keys.


The following example shows code for mapping API names to display labels used in the user interface.

```
"labels": {
  "dimensions": {
    "OpportunityId": "Opportunity Id",
    "*": "Opportunities",
    "StageName": "Opportunity Stage"
  },
  "measures": {
    "Amount": "Total Amount"
  },
  "keys": {
    "IsClosed": {
      "true": "Closed",
      "false": "Open"
    },
    "Outcome": {
```

```

        "true": "Won",
        "false": "Lost"
    },
    "Region": {
        "EU": "Europe",
        "AP": "AsiaPacific",
        "US": "UnitedStates"
    }
}
}

```

 **Note:** Use "*" for the name of the measure that's used when the dashboard is displaying count().

Types Section

The types section of the extended metadata file allows you to group dimensions into composite types that are treated as a single dimension in the user interface. The following example shows code for creating a type that's called "Close Date GMT" and groups date dimensions and measures.

```

"types": {
  "Close Date GMT": {
    "dims": {
      "day": "CloseDate_Day",
      "fullField": "CloseDate",
      "month": "CloseDate_Month",
      "quarter": "CloseDate_Quarter",
      "week": "CloseDate_Week",
      "year": "CloseDate_Year"
    },
    "meas": {
      "epoch_day": "CloseDate_day_epoch",
      "epoch_second": "CloseDate_sec_epoch"
    },
    "type": "date"
  }
}

```

Colors Section

The colors section of the extended metadata file allows you to set custom colors for charts. The following example shows code for setting the colors for particular StageName and Region values.

```

"colors": {
  "StageName": {
    "5 - Closed-Won": "#4f4",
    "5 - Closed-Lost": "#f44"
  },
  "Region": {
    "AP": "#fc6",
    "EU": "#48f",
    "US": "#f88"
  }
}

```

```
}
}
```

Values Query Columns Section

The `values_query_columns` section of the extended metadata file allows you to specify a list of default columns to be displayed for a values table.

```
"values_query_columns": [
  "Id",
  "OpportunityId",
  "StageName"
]
```

Hide Dimensions and Measures Section

The `hide_dimensions` and `hide_measures` sections allow you to provide lists of dimensions and measures to be hidden in the user interface.

```
"hide_dimensions": [
  "Owner-Email"
],
"hide_measures": [
  "TotalMRR"
]
```

Dimensions Section

Add a dimensions section to an XMD file to create custom quick action menus. These menus enable users to do the following from any dimension value in a table or chart within a Wave lens or dashboard:

- Take advantage of actions on Salesforce objects. The current Dimensions implementation supports Account, Cases, Lead, and Opportunity Salesforce objects and so-called [blue actions](#). See “Quick Actions Menu Support for Objects and Actions” in *Enable Quick Actions and Links to Salesforce and External Records With Custom Menus* in Salesforce Help for a complete list of support for Salesforce objects and actions.
- Access records from Salesforce or any website that uses HTTP or HTTPS protocols

Add the dimensions section to the highest level of the XMD file (at the same level as the labels and types sections).

Through the XMD file dimensions section, you can specify if the menu includes all or a subset of actions and a link to a record in Salesforce or an external website.

Adding A Menu With Actions and a Link

The following shows a dimensions section that adds a menu with all available create actions and a link to a record.

```
{
  "dimensions": [
    {
      "field": "Name",
```

```
        "recordIdField": "Id"
      }
    ]
  }
```

In the previous example, `"field"` is the name of the dimension that the menu appears on in dashboard and lens charts and tables. Setting `"recordIdField"` enables the create actions and a link in the menu that opens a record. The link uses the current Salesforce org instance and the dimension (in the example `"Id"`) specified in the `"recordIdField"`.

You can specify `"linkTemplate"` to override the default link, which is `"/{row.recordIdField}"`. (For more detail about `"recordIdField"`, see “Adding a Link to a Salesforce Record to a Menu,” below). Here’s an example showing a link to a record in Google and an optional tooltip:

```
"field": "AccountId",
"linkTemplate":
  "http://www.google.com/?q=AccountID={row.AccountID}
  &AccountName={row.AccountId.Name}}",
"recordIdField": "AccountId.Name",
"linkTooltip": "Custom AccountId Tooltip for Google"
```

Other options include the following:

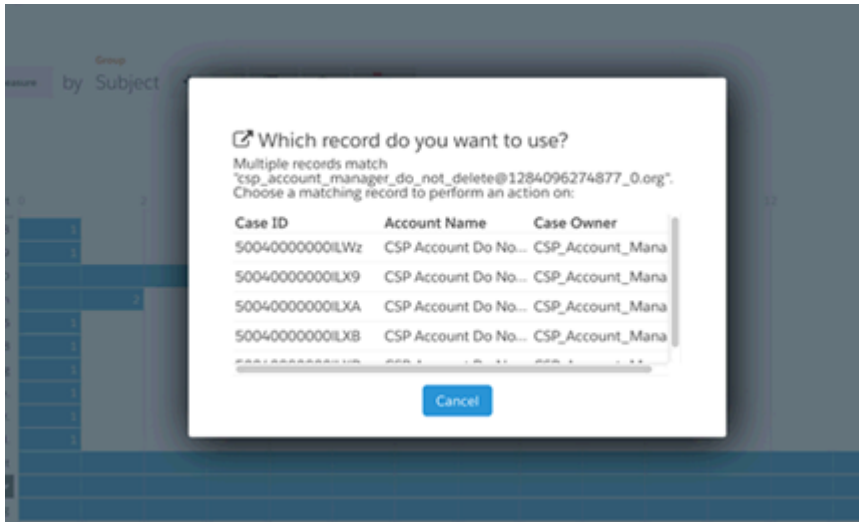
- `"linkTemplateEnabled"`: Defaults to `true` to set the link to the Salesforce or external record. If set to `false`, the menu does not display the open record link option.
- `"salesforceActionsEnabled"`: Defaults to `true` to enable and display actions in the menu. If set to `false`, the menu does not display actions.
- `"salesforceActions"`: Use to include only specific actions on a dimension. The actions specified by `"salesforceActions"` must be available for the record as determined when you set up actions in Salesforce using the action publisher. For example, the following includes the New Account and New Lead actions, where `"name"` references the API name of the action within the action publisher:

```
"salesforceActions": [
  {
    "name": "APIName"
  },
  {
    "name": "APIName"
  }
]
```

In some instances, a dimension value is associated with multiple IDs and is not unique. For example, an opportunity with the name “acme” has multiple opportunity IDs (and records). But the action or link can only be directed to one record. In this scenario, the user is given a choice of associated records in a modal. Here’s an example showing `"recordDisplayFields"`:

```
"field": "AccountId.Name",
"recordIdField": "AccountId.Id"
"recordDisplayFields": ["Case_ID", "Account_Name", "Case_Owner"]
```

This image shows the result of setting `"recordDisplayFields"` from the previous example:



The following combines the above, showing a complete XMD file for a dataset that includes quick action menus on several fields:

```
{
  "dimensions": [
    {
      "field": "Name",
      "recordIdField": "Id"
    },
    {
      "field": "AccountId.Name",
      "recordIdField": "AccountId.Id",
      "linkTooltip": "Custom AccountName Tooltip"
      "recordDisplayFields": ["Name", "Owner"]
    },
    {
      "field": "Case_Subject",
      "linkTemplate":
"http://www.google.com/?q=AccountID={{row.Case_Id}}&AccountName={{row.Case_Owner}}",
      "recordIdField": "Case_Id",
      "linkTooltip": "Custom CaseId Tooltip for google"
    },
    {
      "field": "Id",
      "salesforceActions": [
        {
          "name": "NewAccount"
        },
        {
          "name": "NewLead"
        }
      ],
      "recordIdField": "Id",
      "salesforceActionsEnabled": true,
      "linkTemplateEnabled": false,
      "linkTooltip": "Custom Tooltip for Opp Id"
    }
  ]
}
```

```

    }
  ]
}

```

Adding an Open Record Link to a Menu

If your XMD file has no other specifications, the dimension section for adding an open record link to the menu looks like the following:

```

{
  "dimensions": [
    {
      "field": "dimensionName",
      "linkTemplate": "/{{row.dimensionNameId}}",
      "linkTooltip": "Custom Tooltip Text" //optional
    }
  ]
}s

```

In the previous example, `"field"` is the name of the dimension that the link appears on in dashboard and lens charts and tables. `"LinkTemplate"` is the destination of the link. `"linkTooltip"` is optional and can contain text that appears when a cursor hovers over the link.

Adding a Link to a Salesforce Record to a Menu

To link to a Salesforce record within the current organization instance, configure `"LinkTemplate"` as follows:

```
"linkTemplate": "/{{row.Id}}"
```

In the example, `/` sets the link's destination to your Salesforce organization and `{{row.Id}}` is the record to link to. `Id` is the dimension that's looked up in Salesforce. So specify a dimension that exists in the dataset and that returns results when queried in Salesforce, such as an ID or case number.

The chart or table would contain a link from an account name (such as Acme). If the Salesforce account ID for Acme is 0011a0000040KEz on an instance of Salesforce located at `https://yourInstance.salesforce.com`, the URL generated when the user clicks Acme is `https://yourInstance.salesforce.com/0011a0000040KEz`.

Adding a Link to an External Website to a Menu

To link to an external website and pass information such as a username to the linked website, configure `"LinkTemplate"` like the following:

```
"linkTemplate": "https://www.ExternalWebsite.com/users/{{row.username}}"
```

In this example, `{{row.username}}` passes a username through the URL of an external website. For example, if the username is dsmith, the URL generated by clicking dsmith is `https://www.ExternalWebsite.com/users/dsmith`.

`"LinkTemplate"` must specify `"http://{{row.websiteURL}}"` or `"https://{{row.websiteURL}}"` for the link to work.

Here are some additional examples of adding open record links to menus, each showing variations on the above:

```

"dimensions": [
  {
    "field": "Name",
    "linkTemplate": "/{{row.opportunityid}}",
    "linkTooltip": "Custom AccountName Tooltip"
  },
  {

```

```

    "field": "AccountName",
    "linkTemplate": "https://yourInstance.salesforce.com/{{row.AccountId}}"
  },
  {
    "field": "StageName",
    "linkTemplate":
      "http://www.google.com?q={{row.StageName}}"
  } ]

```

As the last example shows, you can specify any static URL in the XMD file. However, the URL must start with `http://` or `https://`. You can use the `{{row.}}` notation to insert a dynamic value.

Organizations Section

For datasets that combine records from multiple Salesforce org instances, specifying an organizations section in the XMD file makes it possible to construct a link to a specific record in the correct org instance.

Add the organizations section to the highest level of the XMD file (at the same level as the dimensions section). For a given dimension, add a `"linkTemplate"` to create a link to a Salesforce record as described in “Adding a Link to a Salesforce Record to a Menu” in Dimensions Section within this guide. Along with `"linkTemplate"`, you use `"recordOrganizationIdField"` to indicate that `"linkTemplate"` looks for the OrgId dimension in the dataset in which you define the menu.

With `"recordOrganizationIdField"` set, `"linkTemplate"` knows to look for an organizations section in the XMD. In the organizations section of the XMD file, you map between orgIds and instance URLs for each Salesforce org instance referred to by records in the dataset.

The result is that when a user clicks such a link, the mapping in the organizations section makes sure that the link resolves to the correct URL for the record.



Note: The organizations section works only with open records links in actions menus, not with actions.

Here's an example organizations section. Note that each organization Id uses the 18 character format.

```

"organizations": [
  {
    "id": "001i000001AWbWuGTA"
    "instanceUrl": "https://yourInstance1.salesforce.com",
    "label": ""
  },
  {
    "id": "003300000000xEftMGH"
    "instanceUrl": "https://yourInstance2.salesforce.com",
    "label": ""
  }
]

"dimensions": [
  "field": "AccountName"
  "recordOrganizationIdField": "orgId",
  "linkTemplate": "{{instanceUrl}}/{{row.Id}}"
  ...
  .

```


XMD 2.0


Some XMD elements have changed, as have some behaviors. In Salesforce development circles these changes are referred to as XMD 2.0, versus XMD 1.1.

Behind the scenes, a key change is that XMD is now stored in BPOs (Base Platform Objects) rather than in JSON files. The API works on these objects, so you can use the [XMD API endpoints](#) to manipulate your XMD directly.

From the user perspective, you still download and upload JSON files to effect your changes—the XMD is converted on-the-fly. However, there are some side effects of this change:

- XMD is stored for each dataset version.
- `system` XMD is generated when `main.json` is uploaded, or when a GET call is made via the API on an old-version dataflow.



As before, `main` type XMD is created by merging `system` and `user`. Modify the `user` XMD file to customize the formatting of many dashboard elements in Wave Analytics.

 **Warning:** If dataset metadata is changed—like a particular column is deleted or renamed as a result of changes to the dataflow—the associated user XMD must also be updated, so it doesn't continue to reference the changed column and cause validation to fail. Once the XMD has been updated, it must be reloaded (i.e. downloaded then uploaded) in order to pass validation. This must be done even if the changes to the dataflow are reverted.

What Does This Mean To Me?

This table describes changes to XMD elements. While most of these changes are new elements, several are existing elements that are renamed. Please update your XMD if you use these elements.

Element	Next-level element	Next-level element	Type	Note
dimensions	description		String	New. The description of the dimension.
	fullyQualified Name		String	New. The fully qualified name of the dimension.
	origin		String	New. The origin of this dimension.
	dateFormat		String	New. Use to display an easily readable date.
	isMultiValue		Boolean	New. Indicates whether the dimension is multi-value.
	imageTemplate		String	New. The name of the image template.
	customActions Enabled		Boolean	New. Indicates whether the dimension has custom actions enabled.
	customActions		List	New. Custom actions linked to this dimension.
		name	String	New. The name of the action.
		url	String	New. The Url for the action.
		icon	String	New. The icon for the action.
		tooltip	String	New. The tooltip for the action.
		target	String	New. The target for the action.
		method	String	New. The method for the action.

Element	Next-level element	Next-level element	Type	Note
		enabled	Boolean	New. Indicates whether the action is enabled for a specific dimension.
	sfdcActions		List	Renamed to salesforceActions.  Note: <ul style="list-style-type: none"> The user interface still uses XMD 1.1, while the API uses XMD 2.0. Only use the renamed element name if using XMD 2.0. The new <code>enabled</code> flag in the <code>salesforceActions</code> list is a placeholder in XMD 2.0, reserved for future use.
	sfdcActions Enabled		Boolean	Renamed to salesforceActionsEnabled.  Note: The user interface still uses XMD 1.1, while the API uses XMD 2.0. Only use the renamed element name if using XMD 2.0.
measures	description		String	New. The description of the measure.
	fullyQualified Name		String	New. The fully qualified name of the measure.
	origin		String	New. The origin of the measure.
	dateFormat		String	New. The format used for a date that is a measure.
	format		List	Existing.
		prefix	String	New. The prefix placed before the field value.
		unit	String	New. The unit string for the measure. For example, 'cm'.
		suffix	String	New. The suffix placed after the field value.
		decimal Digits	Integer	New. The number of digits displayed after the decimal place.
		negative Parens	Boolean	New. Indicates whether to display negative numbers in parentheses, rather than with a minus sign.
		unit Multiplier	Double	New. The multiplier for the unit.
dates	label		String	New. Label of the Date column.
	compact		Boolean	New. Whether the Date is displayed as compact.
	description		String	New. Description of the Date column.
	showInExplorer		Boolean	New. Whether the Date is shown in the explorer.
	fiscalMonth Offset		Integer	New. Offset number of months for the fiscal year in relation to the calendar year.
	isYearEndFiscal Year		Boolean	New. Whether the Year End is the Fiscal year.

Extended Metadata (XMD) Reference

Element	Next-level element	Next-level element	Type	Note
	firstDayOfWeek		Integer	New. What to use as the first day of the week.
dataset	connector		String	New. Connector source for the dataset.
	fullyQualified Name		String	New. Fully qualified name of the dataset version.
	origin		String	New. Origin representing where this dataset version comes from.
	description		String	New. Description of the dataset.