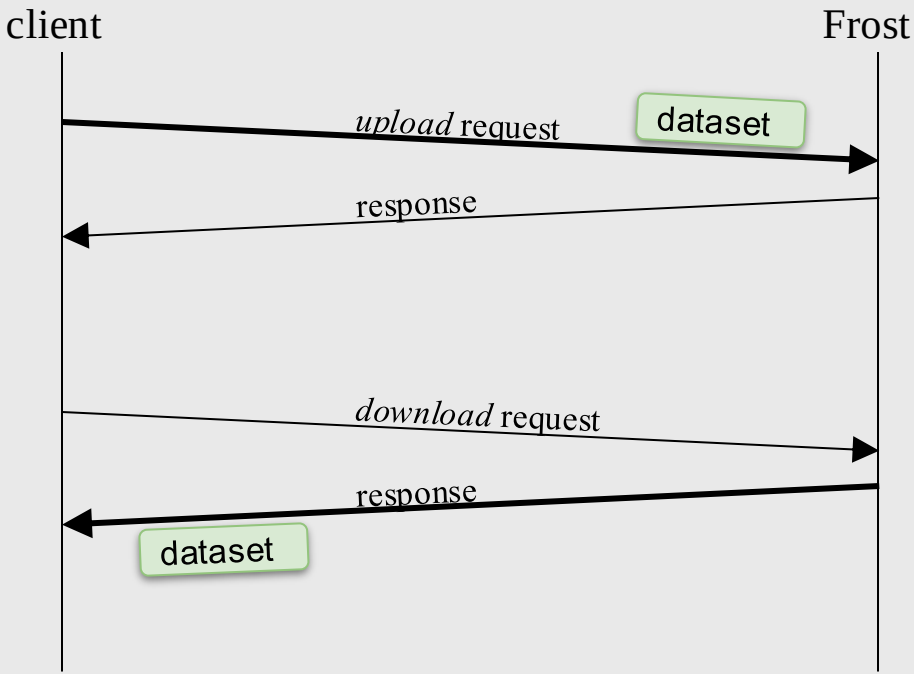
Sending observations to MET via Frost

Request / response



- no session state kept in server, i.e. each request can be understood in isolation
- same dataset format for both upload and download
- HTTPS/POST for upload
- HTTPS/GET for download

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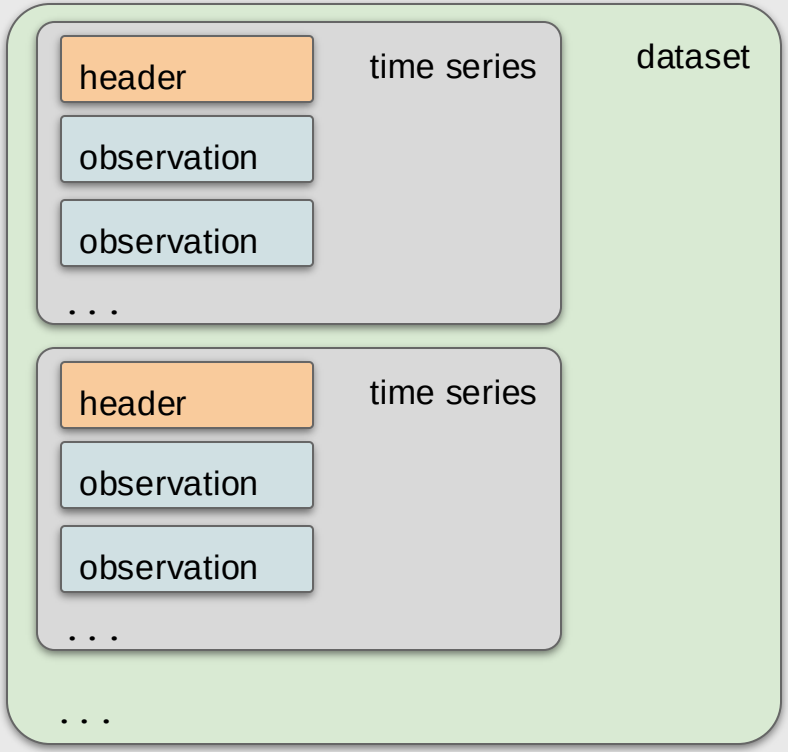
Overall dataset structure



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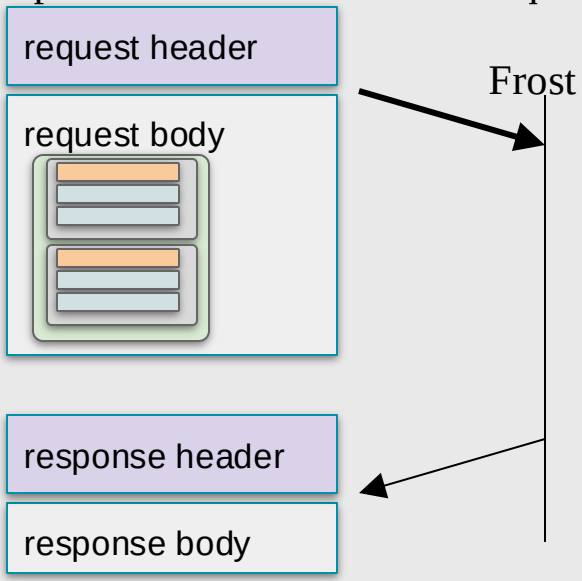
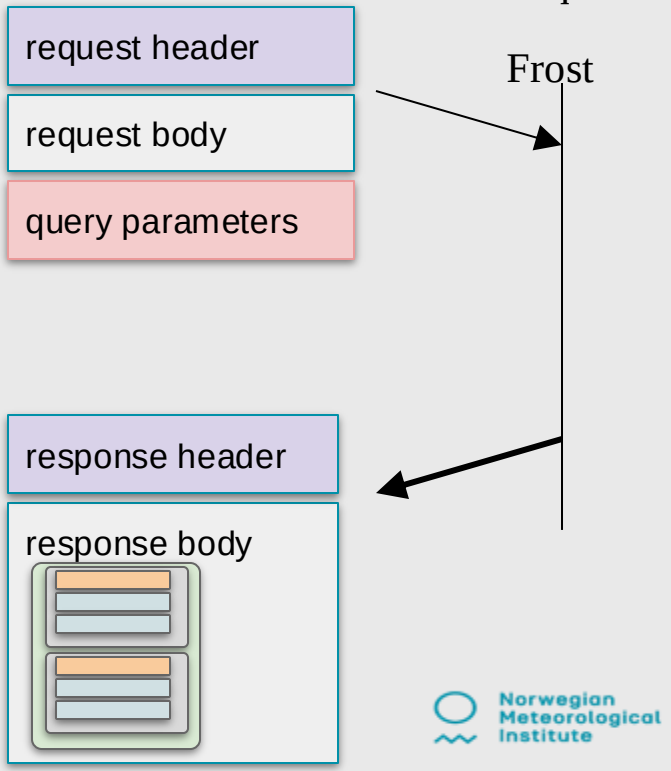
Datasets passed over HTTPS

Upload with HTTPS/POST requests:



Download with HTTPS/GET requests:



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Overall dataset format (JSON)

```
{
    “tstype”: “<time series type>”,
    “tseries”: [
        {<time series 1>},
        {<time series 2>},
        ...
    ]
}
```

Time series format

```
{
    “header”: {
        “id”: {<primary key of time series>},
        “extra”: {<additional header fields>}
    },
    “observations”: [
        {
            “time”: “<observation time (ISO 8601)>”,
            “body”: {<observation value
                      + additional metadata>}
        },
        ...
    ]
}
```

Example: badevann

```
{
    "tstype": "badevann",
    "tseries": [
        {
            "header": {
                "id": {
                    "source": "badetassen.no",
                    "buoyID": "20",
                    "parameter": "temperature"
                },
                "extra": {
                    "name": "Møllebukta",
                    "pos": {
                        "lat": "58.941010",
                        "lon": "5.670380"
                    }
                }
            },
            "observations": [ NEXT PAGE! ]
        }
    ]
}
```


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Example: badevann (cont'd)

```
"observations": [
    {
        "time": "2021-10-31T10:25:30Z",
        "body": {
            "value": "10.3"
        }
    },
    {
        "time": "2021-10-31T12:25:36Z",
        "body": {
            "value": "10.1"
        }
    },
    ...
]
```


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Example: glider


```
{
    "tstype": "glider",
    "tseries": [
        {
            "header": {
                "id": {
                    "source": "UIB-GI",
                    "gliderID": "5620625",
                    "parameter": "sea_water_temperature"
                },
                "extra": {
                    "name": "sg562"
                }
            },
            "observations": [ NEXT PAGE! ]
        }
    ]
}
```


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Example: glider (cont'd)


```
"observations": [
    {
        "time": "2020-06-16T06:00:00Z",
        "body": {
            "pos": {
                "lat": 59.819879,
                "lon": 10.578601
            },
            "value": 12.34,
            "qc_flag": "9"
        }
    },
    ...
]
```


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Example: vertical-profile

```
{
    "tstype": "vertical-profile",
    "tseries": [
        {
            "header": {
                "id": {
                    "instrument": "...",
                    "parameter": "..."
                },
                "extra": {
                    ...
                }
            },
            "observations": [ NEXT PAGE! ]
        }
    ]
}
```

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Example: vertical-profile (cont'd)

```
"observations": [
    {
        "time": "2021-10-31T10:25:30Z",
        "body": {
            "pos": {
                "lat": "...",
                "lon": "..."
            },
            "depth": ["...", "...", ...],
            "value": ["...", "...", ...],
            "qc_flag": ["...", "...", ...]
        }
    },
    ...
]
```

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Example: AVINOR

```
{
    "tstype": "avinor-awos",
    "tseries": [
        {
            "header": {
                "id": {
                    "icao": "engm"
                },
                "extra": {
                    "name": "Oslo lufthavn (Gardermoen)",
                    "pos": {
                        "lon": "11.083889",
                        "lat": "60.202778"
                    }
                }
            },
            "observations": [ NEXT PAGE! ]
        }
    ]
}
```

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Example: AVINOR (cont'd)

```
"observations": [
    {
        "time": "2024-06-10T12:00:00Z",
        "body": {
            "value": "<gzip'ed base64 encoded XML doc>"
        }
    },
    ...
]
```

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Write authentication

- IP whitelisting
  - must write from these IPs, and that’s it

- write tokens
  - can write from any IP, but must provide a write token

Ingest service for existing project

havvarsel-frost.met.no

Exploring Swagger UI (based on OpenAPI spec) for time series types *badevann*, *glider*, and *vertical-profile*.

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General ingest service

frost-ingest.met.no (for example)

General ingestion from external sources, like AVINOR, Ås etc.

Under development!