Station Exposure Description

Station: Maydantal / Майдантал (Oygaing / Ойгаинг)

Station short name:	MTAL / (OYGA)	Operational since:	29.09.2014
Latitude:	41°50'54.34"N	Country:	Republic of Uzbekistan
Longitude:	74°20'03.66"E	Oblast:	Tashkent region
Elevation [m a.s.l.]:	1483m	River basin:	Maydantal

Site Characteristics

Station location:

Main Station

Discharge station Maydantal

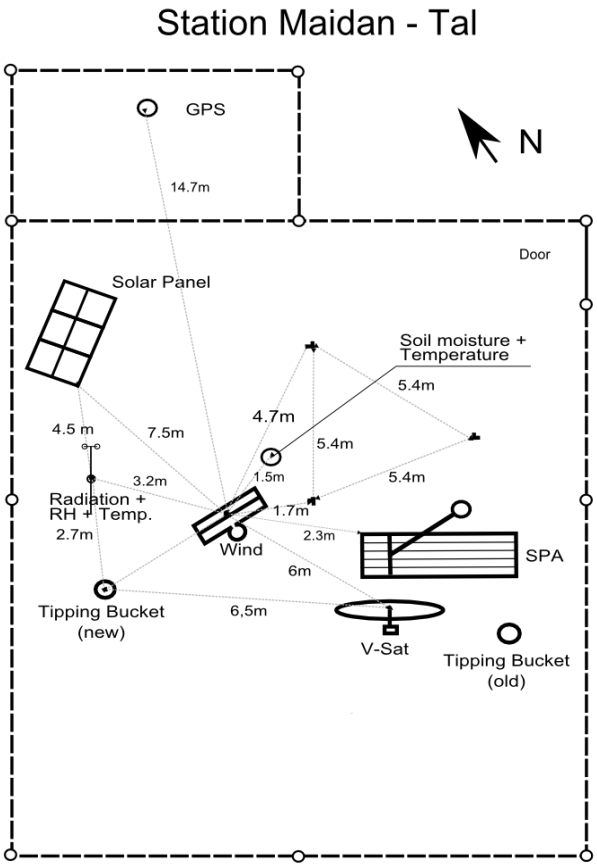
Station location and surroundings

Station Exposure Description

Terrain features:

Degree of urbanization in the surroundings:	Mountain area without any urbanization, only the house of the local operator (electricity from generator); next small village is 3h by car away (station Pskem).
Landscape type (e.g. mountains, coast):	High mountains surrounding the station with gravel and sand/silt in the valley where the station is installed. Riverbed is covered by gravel and big stones.
Direction of slope: Steep slopes, hills, hollows?	Station installed on the plateau between two rivers
Impervious surface, pavements:	No impervious surface
Open water surfaces:	Two rivers from the mountains join about 400 m south of the station (Maydantal and Oygaing)
Main surface cover in the surroundings:	Gravel, stones, sometimes covered by sand and grassland

Station map:



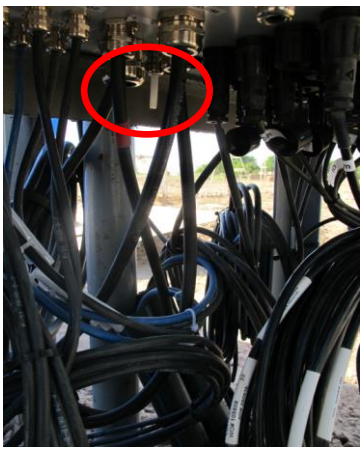
Notes and remarks:

Station Exposure Description

Sensor exposure

Atmospheric pressure:

Sheltered within control cabinet?	Yes
Protected from wind gusts?	Yes



Solar radiation:

Sensor height above ground	1.85 m (center of the device)

Temperature and humidity:

Sensor height in m above ground:	2.44 m (bottom edge of radiation field)
Artificial ventilation?	Principally available but not activated
Surface cover under screen:	Gravel, sand and grassland
Soil under screen:	Gravel and sand/silt between

Precipitation:

Gage rim height in m above ground:	1.50 m
Shield type:	None
Alignment of main axis of tipping bucket:	N-S
Fixation:	Fixed with suspension ropes

Wind:

Anenometer height in m above ground:	10.00 m
Free standing?	Yes
If not free standing:	
Building height, width, length in m	
Vegetation:	Gravel, grassland

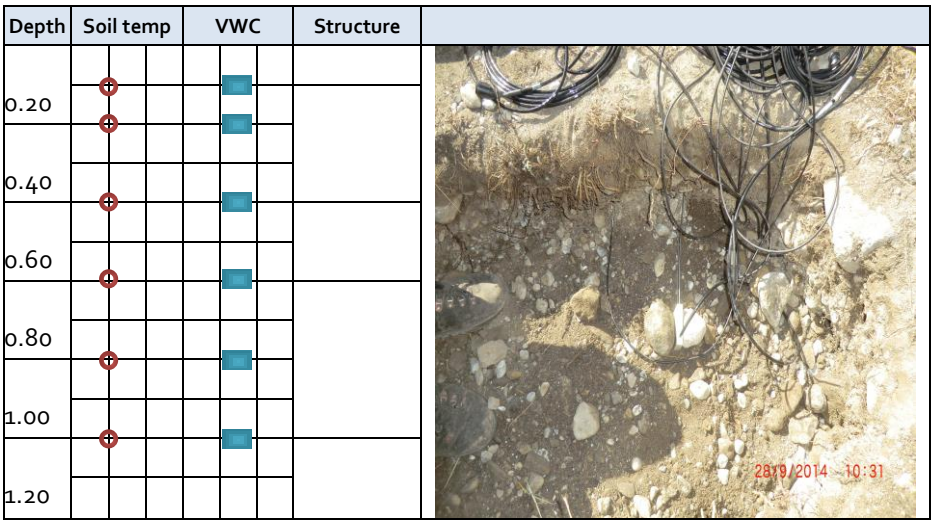
Station Exposure Description

Terrain roughness class:	to N: 2	to E: 2
	to S: 3	to W: 1.5

Soil temperature and soil water content:

Sensor depths in m below ground:	Soil Temp: 10, 20, 40, 60, 50, 80, 100cm;VWC: 10, 20, 40, 60, 80, 100 cm below surface
Soil cover above the soil sensors:	Gravel and sand
Soil type:	Gravel and sand/silt
Soil structure:	Mostly stones/gravel with sand/silty between
Level of water table in m below surface:	Unknown

Soil sensors locations below ground



GPS:

Distance above surface:	1,66 m
Obstructions:	High mountains surrounding the GPS antenna, 0-40°: 10° elevation, 40-100°: 40° elevation, 100-160°: 60° elevation, 160-190°: 40° elevation, 190-280°: 65° elevation, 280-350°: 35° elevation, 350-365°: 75° elevation

Discharge system MTAL:

River:	Maydantal
Water surface under screen:	Turbulent because of big stones
River bed under screen:	Big stones/rocks and gravel

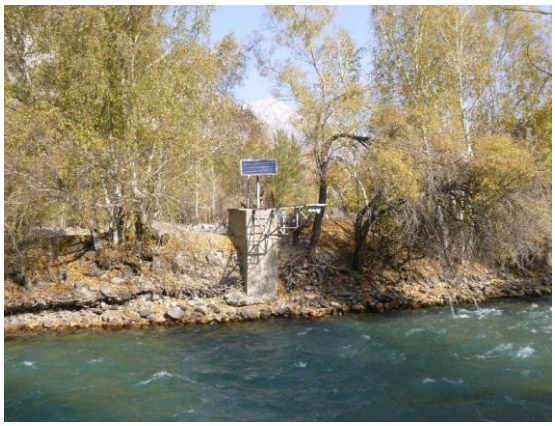
Station Exposure Description

RQ Discharge system MTAL

RQ MTAL (view to north – upstream)

Discharge system OYGA:

River:	Oygaing
Water surface under screen:	Calm surface
River bed under screen:	Gravel



RQ Discharge system OYGA

RQ Discharge system OYGA

Snow depth and snow characteristics:

Ground cover below SPA:	Bare soil
Height of USH-8 above ground:	

Station Exposure Description

Snow Pack Analyzer

List of installed sensors:

Measurement parameter	Manufacturer	Type
Temperature and humidity	Vaisala	HMP155
Air pressure	Setra	278
Wind	RM Young	05103-45
Precipitation	RM Young	52203
Solar radiation	Hukseflux	NR01
Soil moisture	Campbell Scientific	CS616
Soil temperature	Campbell Scientific	T107
Snow parameters	Sommer	SPA + USH8
Discharge Measurements	Sommer	RQ24

Changes and damages:

Hardware

Date	Description of Change
31-10-2015	Installation of second RQ24- system (RQ24-OYGA)
05-10-2018	SPA bands changed(no 1->2, no 1 new), RQ24_MTAL: Turned velocity sensor
26-09-2019	Turned RQ24_MTAL by ~2°

Software

Date	Description of Change
13-07-2015	Change CR1000-config (Data interval changed in hymetd-table 1-> 5 min)
05-10-2015	Changed CR1000-config (search pattern for RQ24)
15-10-2015	Changed name pattern for RQ24

27-01-2016	Changed CR1000-config (inserted internal battery)
06-10-2018	Changed cross profile for RQ24-OYGA
06-11-2018	New software for RQ24-OYGA

Local Operator:

There are local operators living at the station and caring for the sensors (cleaning the rain sensor, cutting the grass around the station and under the snow depth sensor).

Open issues / limitations:

1. The radiation sensor can be influenced by the shadow of the wind mast for few minutes. A better location for the radiation sensor could not be found.
2. Especially during the winter time, the sun hardly appears over the top of the surrounding mountains which causes low solar power input during the winter time for the main station but also for the tow discharge stations.
3. During times with low solar power input, data outages especially during the night can occur at both discharge stations.
4. The antenna for the radio link at the discharge station 1 at the Maydantal river is fixed at at tree. This can be damaged at times with high wind speeds.
5. The measurements of the discharge system 1 at the maydantal river was influenced by a big stone in the river bed. Especially during low water levels, the water was blocked by this stone and swirled around. Therefore, no velocity and discharge values could be measured.

Distances:

1. Station to Solar panels – 750 cms
2. Station to air temperature, humidity – 320 cm
3. Station to solar radiation – 380 cm
4. Station to SPA – 230 cm
5. Station to VSAT antenna – 600 cm
6. Station to raingauge – 300 cm
7. Station to GPS sensor – 1470 cm
8. Station to Soil sensors – 150 cm