



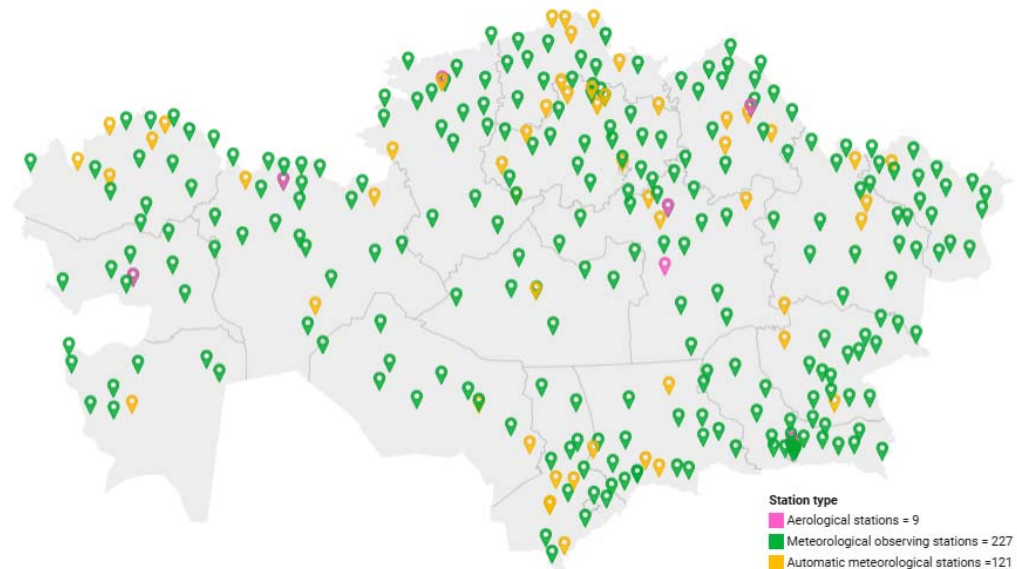
DEPARTMENT OF INFORMATION TECHNOLOGY

MS. AIGERIM SMAGULOVA
HEAD OF INFORMATION DISSEMINATION DIVISION

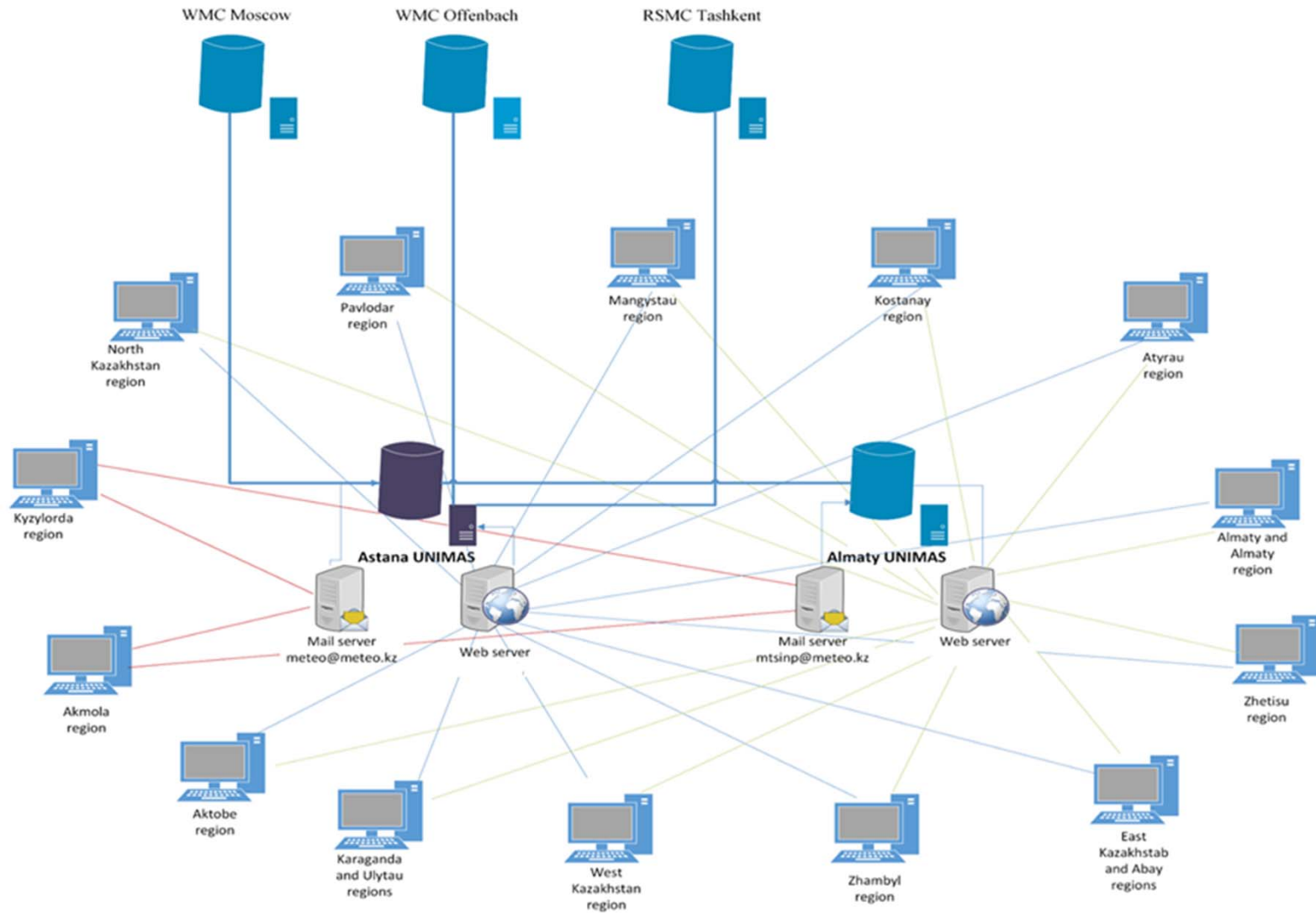
Observation Network

- RSE Kazhydromet collects and processes various types of hydrometeorological information from its national observation network which includes a total of **822 observation stations**.
- **241 meteorological stations**, including **21 automated stations (AMS)**, transmit data to the international exchange.
- **50 AMS** forming part of the **GBON** network provide hourly updates.

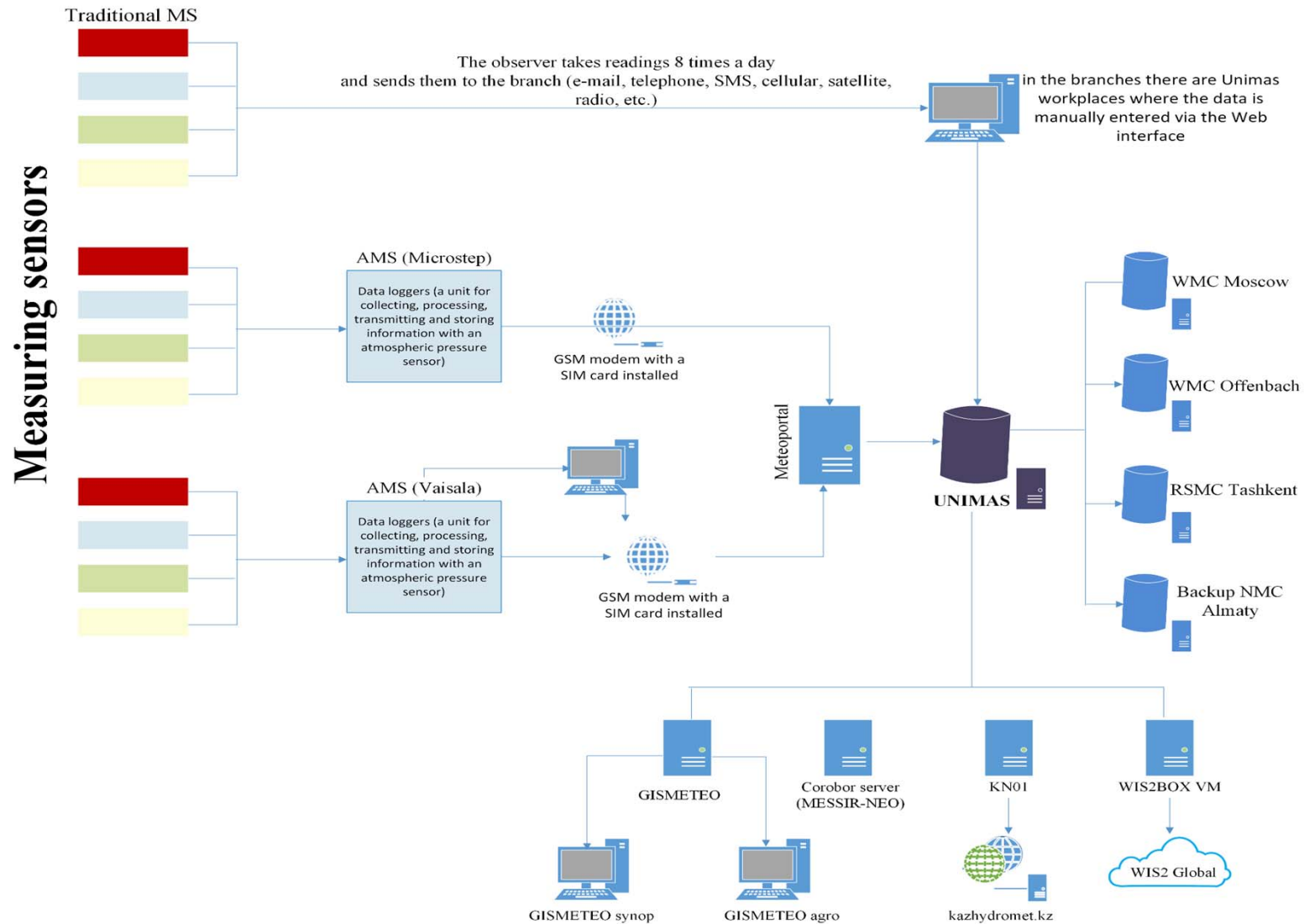
Station Type	Symbol	Quantity
Meteorological stations (Conventional)	M	226
Automatic meteorological stations	AMS	121
Aerological stations	AE	9



UNIMAS (Unified Meteorological Information System)



Scheme for transmitting information from meteorological stations



Key Functions of UniMAS



Core functional groups

- Reception and transmission of meteorological data
- Processing and storage of information
- Manual input and data validation
- Format conversion (e.g. BUFR, SYNOP, KN-01)
- Message distribution and queue management
- System administration and monitoring
- Channel management (e.g. GTS, regional centres)
- Database operations (archiving, retrieval, reporting)



UniMAS interface showing channel status and message distribution.

Канал	Статус	Вход	Выход	Опер.	Канал	Статус	Вход	Выход	Опер.
RRUMS	А---	0	0	32	RRUMS	А---	160	2	0
maps	А---	0	0	0	RRUMS	А---	2	2	0
mail	А---	34	0	0	Almt	А---	164	22	0
kn01_buf	А---	0	0	0	oftenbach	А---	0	0	0
typ	А---	0	0	0	ichs	А---	0	0	0
maps	А---	0	0	0	amc1	А---	0	164	0
meteoцентр	А---	0	0	0	gis	А---	0	97	0
um2_r	А---	0	0	316	Clearse	А---	0	67	0
		0	0	0	amc2	А---	0	0	0
		0	0	0	unimas-virtual	А---	0	0	0

Канал	Номер	Заголовок	Длина	Дата/Время	Получатели
RRUMS	341	SMEX0SEBUM 251200	1010	25/11 12:08:21	gis_mars.amc1-amc2.Clearese.um2_r-unimas-virtual.rpa
RRUMS	342	SMEX0SEBUM 251200	134	25/11 12:08:21	gis_mars.amc1-amc2.Clearese.um2_r-unimas-virtual.rpa
Almt	705	SMEX0SEBUM 251200 +	1010	25/11 12:08:21	
Almt	706	SMEX0SEBUM 251200 +	134	25/11 12:08:21	
RRUMS	343	SMQ1100TBD 251200	332	25/11 12:08:31	gis_mars.amc1-amc2.Clearese.um2_r-unimas-virtual.rpa
Almt	707	SMQ1100TBD 251200 +	332	25/11 12:08:32	
atksks	0	---TLG---	453	25/11 12:08:35	-um2_r-unimas-virtual
	333	VMQZADUAST 251200	449	25/11 12:08:35	gis_mars.Amt.RRUMS.knt.Clearese.um2_r-unimas-virtual.rpa
	93	---TLG---	93	25/11 12:08:41	um2_r-unimas-virtual
	333	AALUATE 251207	89	25/11 12:08:41	op.um2_r-unimas-virtual
Almt	708	CMFABGA7RD 251200	130	25/11 12:08:41	gis.um2_r-unimas-virtual.rpa
mail	0	---GAO---	3869	25/11 12:08:44	um2_r-unimas-virtual
mail	0	---GAO---	124	25/11 12:08:44	
	0	---GAO---	38	25/11 12:08:44	rec.um2_r-unimas-virtual
	0	CMQO	79	25/11 12:08:44	um2_r-unimas-virtual.rpa
tna	0	SMQZ90ASBD 251200	123	25/11 12:08:44	tna
	123	25/11 12:08:44			Clearse.gis_mars.amc1-amc2.um2_r-unimas-virtual.rpa
RRUMS	344	SMQBTOLQSM 251200	959	25/11 12:08:45	gis_mars.amc1-amc2.Clearese.um2_r-unimas-virtual.rpa
Almt	709	SMQBTOLQSM 251200 +	959	25/11 12:08:45	
RRUMS	345	SMUR11UKMS 251200	1026	25/11 12:08:55	gis_mars.amc1-amc2.Clearese.um2_r-unimas-virtual.rpa
Almt	710	SMUR11UKMS 251200 +	1026	25/11 12:08:56	

Дата/Время	Ylen	Ylen	Ylen	Text
25/11 11:46:32	gis	2630	WARN	связь потеряна
25/11 11:46:33	gis	2630	NOTICE	связь установлена
25/11 11:52:38	gis	2630	WARN	связь потеряна
25/11 11:52:39	gis	2630	NOTICE	связь установлена
25/11 11:55:24	gis	2630	WARN	связь потеряна
25/11 11:55:25	gis	2630	NOTICE	связь установлена
25/11 11:58:34	gis	2630	WARN	связь потеряна
25/11 11:58:35	gis	2630	NOTICE	связь установлена
25/11 12:01:32	gis	2630	WARN	связь потеряна
25/11 12:01:33	gis	2630	NOTICE	связь установлена

UniMAS interface showing message distribution parameters and distribution results.

Выход Журнал 1806 Послать Печать Сохранить Сброс Настройки

Принято с канал: * RRUMS Дата/Время: 18/06 04:22:23

Последовательный номер: 358 Количество текстов: 1 lpr: 0x16ce1

Откуда: Channel Тип: Normal Формат: WMO Аварийный конец: нет Принудительно: нет

Дублирование: нет Распределение Ключ: Направлено в: rou Получателей: 4 Длина: 47113

Ключ: * NHX025RUMS180000 Получатель: *

Текст: *

Параметры распределения

N	Маска	ROU_DB	Параметры	Код распределения	При.	Получатель	Дата/Время
0	NN*			Слишком большое сообщение	2	>gis	18/06 04:22:23
1	NN*			В очереди	2	Almt	18/06 04:22:23
2	NN*			Послано	2	gis_mss2g	18/06 04:22:23

Текст сообщения

358
NHX025 RUMS 180000
GRIB
Бинарное сообщение

UniMAS Web Interface: Remote Access Functions

UniMAS provides secure remote web access for the operational transmission of hydrometeorological messages.

Key Web Modules:



WMA — Web Map Access

Access to facsimile weather charts



WDR / WDS — Web Data Exchange

Exchange meteorological messages with external systems



WDA — Web Data Access

View and retrieve meteorological message database



WSPA — Web Satellite Product Access

Access to processed satellite imagery

- Enables real-time access for duty forecasters and regional offices
- Supports coordination, monitoring, and external data sharing

KN-01: Forecast Coordination and Messaging System

KN-01 is a specialized internal system designed for managing synoptic and storm-related information within Kazhydromet.

It provides a secure platform for:

- Creating, editing, and reviewing forecasts and alerts
- Operational messaging and coordination during hazardous weather events

It includes a forecast exchange function that allows real-time sharing of meteorological information between regional branches and the Central Office of RSE “Kazhydromet”.



Meteoportal



System Overview

A unified system for collecting data from automated meteorological stations (AMS) across the national observation network.

It provides a secure platform for:

- Creating, editing, and reviewing forecasts and alerts
- Operational messaging and coordination during hazardous weather events



Collection Frequency

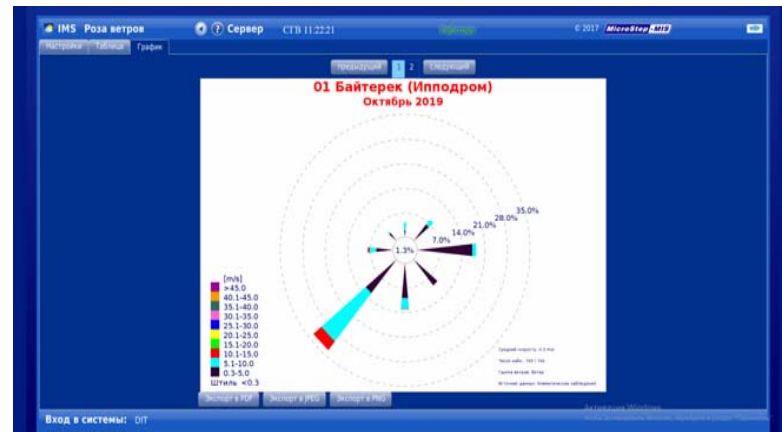
- Real-time data acquisition every minute
- Output formats: table, chart, report
- Custom periods: hourly, multi-hour, daily, monthly
- Statistical indicators: min, max, average values

Meteoportal: Visualization Tools

Live Data Display



Wind Rose



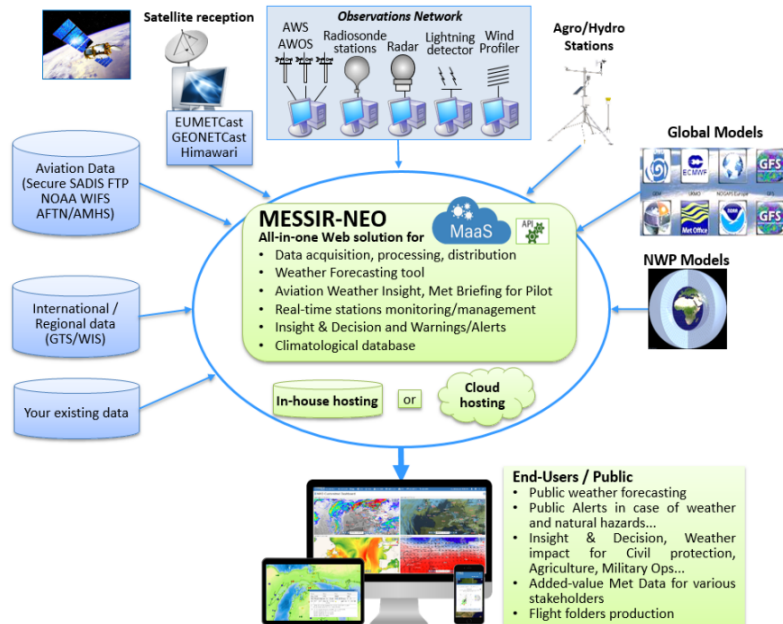
AMS Status Monitoring

[illegible]

Interactive Map View



MESSIR-NEO: From Data to Decision – Web-Based Forecasting and Alert Platform



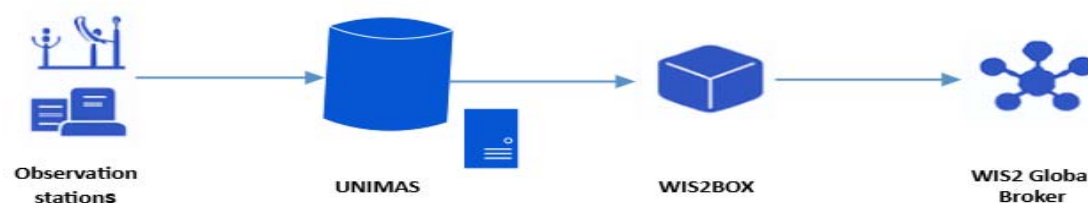
«Kazhydromet» RSE received three letters of guarantee from Campbell Scientific France: on November 22, 2023, on June 18, 2024 and on November 1, 2024.

However, to date, the obligations assumed in the letters of guarantee have not been fulfilled. In addition, we bring to your attention the existing problematic issues:

- Migration of NEODPS as the main switching system for messages to exchange data with RTH Moscow and Tashkent;
- Decoding of radar data (EEC, Baron, Selex);
- Display of local NWP (WRF, SILAM) as a layer on the map;
- Data integration in Cyrillic (storm/aviation);
- Data integration with AMS (Microstep- MeteoPortal, Vaisala-MeteoServer);
- Display of FENGYUN satellite data as a layer on the map;
- Display of lightning data;
- Russification of the interface;

WMO Information System – Version 2 (WIS2)

Kazhydromet is actively integrating into WIS2 via a dedicated WIS2box node deployed at the National Center in Astana.



WIS 2.0 implementation plan

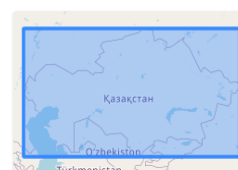


Welcome to WIS 2.0 in a box!

Hourly synoptic observations from fixed-land stations (SYNOP) (kz-kazhydromet)

Topic: origin/a/wis2/kz-kazhydromet/data/core/weather/surface-based-observations/synop
Metadata Identifier: urn:wmo:md:kz-kazhydromet:core.surface-based-observations.synop

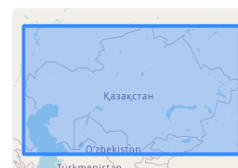
EXPLORE OBSERVATIONS METADATA MESSAGES



Upper-level temperature/humidity/wind reports from fixed-land stations (TEMP) (kz-kazhydromet)

Topic: origin/a/wis2/kz-kazhydromet/data/core/weather/surface-based-observations/temp
Metadata Identifier: urn:wmo:md:kz-kazhydromet:core.surface-based-observations.temp

METADATA MESSAGES



WIS2 – Integrations into the new WMO Information system

Kazhydromet's Capabilities:

- Publishes data in open, standardized formats (JSON, CSV, BUFR)
- Uses MQTT and Web APIs for real-time data access
- Supports metadata-driven discovery and filtering
- Prepares selected observations (e.g. SYNOP, TEMP) for publication

WIS2

