

Database Design – ANRS Web

acs_users

The table used for keeping details of the users who are registered to access the system.

Field	Data Type	Constraints	Description
user_id	NUMBER	PRIMARY KEY	The unique identifier for user record
user_name	VARCHAR2(50)	UNIQUE NOT NULL	
password	RAW(2000)	UNIQUE NOT NULL	
first_name	VARCHAR2(50)	UNIQUE NOT NULL	
last_name	VARCHAR2(50)	UNIQUE NOT NULL	
mobile	VARCHAR2(50)	UNIQUE NOT NULL	
email	VARCHAR2(200)	UNIQUE NOT NULL	
group_ids	JSON	NOT NULL	A user may be associated with multiple groups; Ex: ["1","2"]
default_group_id	NUMBER	NOT NULL; REFERENCES acs_groups(group_id)	The ID of the default group
desig_id	NUMBER	NOT NULL; REFERENCES acs_designations(desig_id)	The designation of the employee in the organization.
multi_session	CHAR(1)	CHECK (active IN ('Y', 'N')); DEFAULT 'Y'	Whether multi-session login allowed
last_login_at	TIMESTAMP		The date and time of user's last login to the application

last_logout_at	TIMESTAMP		The date and time of user's last logout from the application
created_by	NUMBER		This will be NULL for admin or root level user
created_at	TIMESTAMP	DEFAULT SYSTIMESTAMP	The date and time at which the record was created
modified_by	NUMBER	REFERENCES acs_users(user_id)	The user who modified the record
modified_at	TIMESTAMP	DEFAULT NULL	The date and time at which the record was modified
active	CHAR(1)	CHECK (active IN ('Y', 'N')); DEFAULT 'Y'	Whether the user is active or not

acs_groups

The table is used for keeping various groups based on different roles that a user can have.

Field	Data Type	Constraints	Description
group_id	NUMBER	PRIMARY KEY	The unique identifier for user group
group_name	VARCHAR2(50)	UNIQUE NOT NULL	
created_by	NUMBER	REFERENCES acs_users(user_id)	The user who created the record
created_at	TIMESTAMP	DEFAULT SYSTIMESTAMP	The date and time at which the record was created
modified_by	NUMBER	REFERENCES acs_users(user_id)	The user who modified the record
modified_at	TIMESTAMP	DEFAULT NULL	The date and time at which the record was modified
active	CHAR(1)	CHECK (active IN ('Y', 'N')); DEFAULT 'Y'	Whether the user group is active or not

acs_designations

Field	Data Type	Constraints	Description
desig_id	NUMBER	PRIMARY KEY	The unique identifier for employee designation
desig_name	VARCHAR2(50)	UNIQUE NOT NULL	
created_by	NUMBER	REFERENCES acs_users(user_id)	The user who created the record
created_at	TIMESTAMP	DEFAULT SYSTIMESTAMP	The date and time at which the record was created
modified_by	NUMBER	REFERENCES acs_users(user_id)	The user who modified the record
modified_at	TIMESTAMP	DEFAULT NULL	The date and time at which the record was modified
active	CHAR(1)	CHECK (active IN ('Y', 'N')); DEFAULT 'Y'	Whether the employee designation is active or not

acs_menus

The table keeps navigation menus with parent-child relationships to represent the hierarchical structure of the menu items.

Field	Data Type	Constraints	Description
menu_id	NUMBER	PRIMARY KEY	The unique identifier for user record
menu_name	VARCHAR2(50)	UNIQUE NOT NULL	The name or label of the menu item
menu_url	VARCHAR2(200)	UNIQUE NOT NULL	The link associated with the menu item
menu_description	VARCHAR2(200)		A description on the menu
parent_menu_id	VARCHAR2(50)	REFERENCES acs_menus (menu_id)	Establishes the parent-child relationship. If a menu item has no parent, it can be NULL.
display_order	NUMBER		the order in which menu items should be displayed
created_by	NUMBER	REFERENCES acs_users(user_id)	The user who created the record
created_at	TIMESTAMP	DEFAULT SYSTIMESTAMP	The date and time at which the record was created
modified_by	NUMBER	REFERENCES acs_users(user_id)	The user who modified the record
modified_at	TIMESTAMP	DEFAULT NULL	The date and time at which the record was modified
active	CHAR(1)	CHECK (active IN ('Y', 'N')); DEFAULT 'Y'	Whether the user is active or not

acs_group_menus

The table keeps association of user groups and menus. The table defines the functionalities (menus) authorized to different user groups.

Field	Data Type	Constraints	Description
group_menu_id	NUMBER	PRIMARY KEY	The unique identifier for group-menu record
group_id	NUMBER	REFERENCES acs_groups (group_id)	The group for which permissions are being defined
menu_id	NUMBER	REFERENCES acs_menus (menu_id)	The functionality menu which is authorized to access by the group
created_by	NUMBER	REFERENCES acs_users(user_id)	The user who created the record
created_at	TIMESTAMP	DEFAULT SYSTIMESTAMP	The date and time at which the record was created
modified_by	NUMBER	REFERENCES acs_users(user_id)	The user who modified the record
modified_at	TIMESTAMP	DEFAULT NULL	The date and time at which the record was modified
active	CHAR(1)	CHECK (active IN ('Y', 'N')); DEFAULT 'Y'	Whether the record is active or not

conf_miss_types

The mission type refers to the type of mission based on the type of data or type of data source associated with a mission. The table defines IDs for mission types.

Field	Data Type	Constraints	Description
miss_type_id	NUMBER	PRIMARY KEY	The unique identifier for mission type
miss_type_name	VARCHAR(200)		An identifying name for the mission type
type_value_needed	CHAR(1)		Whether the user to be asked with specific details on mission type while configuring a machine (such as mission number/satellite name)
description	VARCHAR(200)		A description field
created_by	NUMBER	REFERENCES acs_users(us er_id)	The user who created the record
created_at	TIMESTAMP	DEFAULT SYSTIMESTA MP	The date and time at which the record was created
modified_by	NUMBER	REFERENCES acs_users(us er_id)	The user who modified the record
modified_at	TIMESTAMP	DEFAULT NULL	The date and time at which the record was modified
active	CHAR(1)	CHECK (active IN 'Y', 'N'); DEFAULT 'Y'	Whether the record is active or not

Data:

miss_type_id	miss_type_name
1	Surface (Shallow)
2	Surface (Deep)
3	Mission Number
4	Satellite Name
5	Sensor Name

conf_miss_pgm

The table keeps data on various mission programmes for data that will be arriving in the system for processing, analysis and modelling.

Field	Data Type	Const raints	Description
miss_pgm_id	NUMBER	PRIMARY KEY	The unique identifier for mission
miss_pgm_name	VARCHAR(200)		An identifying name for the mission
description	VARCHAR(200)		A description field
created_by	NUMBER	REFERENCES acs_users(us er_id)	The user who created the record
created_at	TIMESTAMP	DEFAULT SYSTIMESTA MP	The date and time at which the record was created
modified_by	NUMBER	REFERENCES acs_users(us er_id)	The user who modified the record
modified_at	TIMESTAMP	DEFAULT NULL	The date and time at which the record was modified
active	CHAR(1)	CHECK (active IN ('Y', 'N'); DEFAULT 'Y'	Whether the record is active or not

Data:

miss_pgm_id	miss_pgm_name
1	Varunamaalaa
2	INSS Mission
3	Satellite
4	WOD
5	Model Data
6	NODPAC

conf_missions

The table keeps a list of missions coming under each mission identified by different characteristics, mission number or as from different satellites. The table identifies each mission characterized by its mission type also.

Field	Data Type	Const raints	Description
mission_id	NUMBER	PRIMARY KEY	The unique identifier for mission
mission_pgm_id	NUMBER	FK	An identifier for the mission programme
missiontype_id	NUMBER	FK	An identifier for the mission type
missiontype_value	VARCHAR(200)		Value for mission type such as satellite name, mission number etc.
description	VARCHAR(200)		A description field
created_by	NUMBER	REFERENCES acs_users(us er_id)	The user who created the record
created_at	TIMESTAMP	DEFAULT SYSTIMESTA MP	The date and time at which the record was created
modified_by	NUMBER	REFERENCES acs_users(us er_id)	The user who modified the record
modified_at	TIMESTAMP	DEFAULT NULL	The date and time at which the record was modified
active	CHAR(1)	CHECK (active IN ('Y', 'N'); DEFAULT 'Y'	Whether the record is active or not

mission_id	mission_pgm_id	missiontype_id	missiontype_value
1	1	1	Shallow
2	1	2	Deep
3	2	3	1
4	2	3	2
5	2	3	3
6	3	4	SatName1
7	3	4	SatName2
8	4	5	SenName1
9	4	5	SenName2
10	4	5	SenName3
11	4	5	SenName4
12	5	??	

conf_institutions

Field	Data Type	Con straints	Descripti on
inst_id	NUMBER	PRIMARY KEY	The unique identifier for various institutions
inst_name	VARCHAR(200)		Name of institute
description	VARCHAR(200)		A description field
created_by	NUMBER	REFERENCE S acs_users(u ser_id)	The user who created the record
created_at	TIMESTAMP	DEFAULT SYSTIMEST AMP	The date and time at which the record was created
modified_by	NUMBER	REFERENCE S acs_users(u ser_id)	The user who modified the record
modified_at	TIMESTAMP	DEFAULT NULL	The date and time at which the record was modified
active	CHAR(1)	CHECK (active IN ('Y', 'N')); DEFAULT 'Y'	Whether the record is active or not

conf_instruments

The table keeps a list of instruments that can be equipped with different data sources

Field	Data Type	Constraint s		Descripti on
instr_id	NUMBER	PRIMARY KEY		The unique identifier for various instruments that can be equipped with different data source
instr_name	VARCHAR(200)			Name of instrument such as a CTD, AWS, Analog Hydrophone
description	VARCHAR(200)			description field
created_by	NUMBER	REFERENCE S acs_users(u ser_id)		The user who created the record
created_at	TIMESTAMP	DEFAULT SYSTIMEST AMP		The date and time at which the record was created
modified_by	NUMBER	REFERENCE S acs_users(u ser_id)		The user who modified the record
modified_at	TIMESTAMP	DEFAULT NULL		The date and time at which the record was modified
active	CHAR(1)	CHECK (active IN ('Y', 'N')); DEFAULT 'Y'		Whether the record is active or not

Data:

instr_id	sensor_name
1	Conductivity, Temperature, Depth (CTD)
2	AWD
3	Electromagnetic current meter
4	Analog Hydrophone
5	Digital Hydrophone
6	Camera

conf_params

The table keeps a list of parameters that are associated with various instruments. This includes both direct and derived parameters

Field	Data Type	Constraints	Description
param_id	NUMBER	PRIMARY KEY	The unique identifier for various parameters
param_name	VARCHAR(200)		Name of parameter such as temperature, conductivity, depth
description	VARCHAR(200)		description field
created_by	NUMBER	REFERENCES acs_users(us er_id)	The user who created the record
created_at	TIMESTAMP	DEFAULT SYSTIMESTA MP	The date and time at which the record was created
modified_by	NUMBER	REFERENCES acs_users(us er_id)	The user who modified the record
modified_at	TIMESTAMP	DEFAULT NULL	The date and time at which the record was modified
active	CHAR(1)	CHECK (active IN 'Y', 'N'); DEFAULT 'Y'	Whether the record is active or not

Data:

param_id	param_name
1	Temperature
2	Salinity
3	Depth
4	Sound Velocity
5	SLD
6	MLD
7	Density
8	Noise Level (wav file)

conf_instr_param

The table keeps the parameters that can be measured/derived from each instrument

Field	Data Type	Constraints	Description
instr_param_id	NUMBER	PRIMARY KEY	The unique identifier for sensor-parameter association
instr_id	NUMBER	FK	Reference ID to instrument ID
param_id	NUMBER	FK	Reference ID to parameter ID
derived	CHAR(1)	CHECK (active IN ('Y', 'N'));	Whether a derived parameter or not for the instrument
description	VARCHAR(200)		description field
created_by	NUMBER	REFERENCES acs_users(user_id)	The user who created the record
created_at	TIMESTAMP	DEFAULT SYSTIMESTAMP	The date and time at which the record was created
modified_by	NUMBER	REFERENCES acs_users(user_id)	The user who modified the record
modified_at	TIMESTAMP	DEFAULT NULL	The date and time at which the record was modified
active	CHAR(1)	CHECK (active IN ('Y', 'N')); DEFAULT 'Y'	Whether the record is active or not

Data:

instr_id	param_id	derived	
1	1	N	
1	2	N	
1	3	N	
1	4	Y	
2			
2			
3			

conf_datasources

Field	Data Type	Const raints	Description
ds_id	NUMBER	PRIMARY KEY	The unique identifier for data source
ds_name	VARCHAR(200)		Name of datasource (Ocean MET SATCOM, Ocean MET HDD, Acoustic SATCOM, Acoustic HDD LF, Acoustic HDD HF, Buoy and Sensor Health, Camera HDD, Camera SATCOM)
mission_id	NUMBER	FK	The mission with which the datasource is associated with (mission ID including reference to mission type)

data_type	CHAR(1)		Data structured or unstructured. S for Structured and U for unstructured
data_transfer_mode	CHAR(10)		Whether data transferred ONLINE or OFFLINE.
data_enc_status	CHAR(1)		Data encrypted or not. E for Encrypted and N for not encrypted. This will be applicable only for offline data. Any encryption information to store?
data_timespan	VARCHAR(200)		Length of time covered by the data contained within the received chunk. is this configurable for a data source or vary for each data received? or vary for each sensor involved in data source? (Each file received will have continuous data for an Acoustic SATCOM Live)
data_drc_receive_frequency	VARCHAR(200)		The time frequency at which file received in DRC. It will be continuous for Acoustic SATCOM Live and for Ocean MET SATCOM, it will be 30 minutes.
description	VARCHAR(200)		Description field
created_by	NUMBER	REFERENCES acs_users(us er_id)	The user who created the record
created_at	TIMESTAMP	DEFAULT SYSTIMESTA MP	The date and time at which the record was created
modified_by	NUMBER	REFERENCES acs_users(us er_id)	The user who modified the record
modified_at	TIMESTAMP	DEFAULT NULL	The date and time at which the record was modified

active	CHAR(1)	CHECK (active IN ('Y', 'N')); DEFAULT 'Y'	Whether the record is active or not
--------	---------	--	-------------------------------------

datasource_id	datasource_name	mission_id	instr_id	data_type	data_transfer_mode	data_enc_status	data_period	data_drc_receive_frequency
1	Ocean MET SATCOM	1	3	S	ONLINE	NULL	30min	LIVE
2	Buoy Status SATCOM Live	1		S	ONLINE	NULL		LIVE
3	Sensor Status SATCOM Live	1		S	ONLINE	NULL	30min	LIVE
4	Camera Live	1		S	ONLINE	NULL		LIVE
	Acoustic SATCOM Live	1	[2,3]	U	ONLINE	NULL		LIVE
	Acoustic HF@Cont	1	[2,3]	U	OFFLINE	E	Continuous	1month
	Acoustic LF@Cont	1	[2,3]	U	OFFLINE	E	Continuous	1month

	Acoustic Live@Cont	1	[2,3]	U	OFFLINE	E	Continuous	1month
	Ocean MET HDD@1min	1	1	S	OFFLINE	E	1min	1month
	Sensor Status HDD@1min	1		S	OFFLINE	E	1min	1month
	Sensor Status SATCOM @30min	1		S	OFFLINE	E	30min	1month
	Ocean MET SATCOM@ 30min	1		S	OFFLINE	E	30min	1month
	Camera HDD	1		S	OFFLINE	N	1min	1month
	Camera Live	1		S	OFFLINE	N	30min	1month
	Buoy HDD@1min	1		S	OFFLINE	N	1min	1month
	AIS	1		S	OFFLINE	N		
	Buoy SATCOM@ 30min	1		S	OFFLINE	N	30min	1month

	NCMRWF	1		S	OFFLI NE	N		
	ECMWF	1		S	OFFLI NE	N		
	Satellite	1		S	OFFLI NE	N		
	Deep Water surface Buoy	1		S	OFFLI NE	N		

miss_dpl

Keeps a list of deployment for each mission
copy from feature needed for below

Field	Data Type	Const raints	Description
miss_dpl_id	NUMBER	PRIMARY KEY	The unique identifier for each mission deployment
d	NUMBER	FK	ID of the mission being deployed
datetime			Date and time of deployment
_datetime			
option			
d_by			
d_at			
ed_by			
ed at			

miss_sensors

Sensors are various physical components attached data sources. Instrument is a generic term used for the sensor type. If CTD is an instrument, CTD-1, CTD-2 etc. are physical sensors attached as part of each mission deployment.

Field	Data Type	Constraints	Description
sen_id	NUMBER	PRIMARY KEY	The unique identifier for a sensor
instr_id	NUMBER	FK	Instrument ID. The type of sensor or its generic name
sen_sl_no			Serial number identifying each physical sensor
description			
created_by			
created_at			
modified_by			
modified_at			
active			

miss_dpl_sen

Field	Data Type	Const raints	Description
miss_dpl_sen_id	NUMBER	PRIMARY KEY	The unique identifier for mission deployment - sensor mapping; Identifying a sensor w.r.t to the deployment in which it is attached.
miss_dpl_id	NUMBER	FK	Reference to mission deployment
sen_id	NUMBER	FK	Reference to sensor
sen_label	VARCHAR(10)		Auto generated name <InstrumentName>@<Depth at which deployed>
gain	NUMBER		The gain of the senosr
depth	NUMBER		The depth at which (unit) the sensor is deployed
ds_ids	ARRAY	FK	Data sources associated with the sensor. ie. These data sources will have data from the deployed sensor.
tech_conf_file	VARCHAR(10)		The location of technical file; Kept for each deployment of the sensor. Whether this is specific to sensor or each deployment?
active_datetime			
description			
created_by			
created_at			
modified_by			
modified_at			
active			

miss_dpl_sen_ds

The table keeps association of deployed sensor with data sources. The list of data sources from which the sensor data is expected to arrive is stored in the table.

Field	Data Type	Constraints	Description
miss_dpl_sen_ds_id	NUMBER	PRIMARY KEY	The unique identifier for mission deployment - sensor mapping; Identifying a sensor w.r.t to the deployment in which it is attached.
miss_dpl_sen_id	NUMBER	FK	
ds_id	NUMBER	FK	The Data source ID Data sources associated with the sensor. ie. These data sources will have data from the deployed sensor.
description			
created_by			
created_at			
modified_by			
modified_at			
active			

data_struct_store

The meta-data and measurement for data coming from structured data sources reside here.

Field	Data Type	Const raints	Description
data_struct_store_id	NUMBER	PK	
ds_id	NUMBER	FK	Data source ID. The data coming to DRC for a data source either through online or offline
capture_date			
capture_time			
description			
created_by			
created_at			
modified_by			
modified_at			
active			

data_struct_store_params

Field	Data Type	Const raints	Description
data_struct_store_param_id	NUMBER	PK	Primary Key
data_struct_store_id			reference to the data packet received for the data source at a particular time.
miss_dpl_sen_id	NUMBER	FK	The sensor ID w.r.t deployment for which data is received from the data source
param_id			ID for parameters such as temperature, sensitivity, salinity and so on
param_value			The value for the parameters
qc1_value			QC1 value for the parameter
qc2_value			
mean_value			
curtosis_value			
percentile_value			
accept_or_reject			Yes or No
description			
created_by			
created_at			
modified_by			
modified_at			
active			

data_unstruct_store

The meta-data and measurement for data coming from structured data sources reside here.

Field	Data Type	Const raints	Description
data_unstruct_store_id	NUMBER	PK	
ds_id	NUMBER	FK	Data source ID. The data coming to DRC for a data source either through online or offline
capture_date			
capture_time			
raw_data_loc			location of unstructured data file
description			
one_third_octave	ARRAY of 1D/JSON		One dimensional array of 31 values with 1...31 in x axis and amplitude values in y axis
spectrogram_loc	VARCHAR(200)		Location of spectrogram JSON location
created_by			
created_at			
modified_by			
modified_at			
active			

conf_buoy_ref_loc

The tabel to be configured as part of a mission deployment and stores the boundary lat and long of buoy location

Field	Data Type	Const raints	Description
conf_buoy_ref_loc_id	NUMBER	PK	
miss_dpl_id	NUMBER	FK	Reference to mission deployment
latitude			
longitude			
description			
created_by			
created_at			
modified_by			
modified_at			
active			

Annexure - 1

The JSON format of one_third_octave

```
{
  "one_third_octave": [
    {
      "point": 1,
      "freq": 20
    },
    {
      "point": 2,
      "freq": 25
    },
    {
      "point": 3,
      "freq": 31.5
    },
    {
      "point": 4,
      "freq": 40
    }
  ]
}
```

```
},
{
  "point": 5,
  "freq": 50
},
{
  "point": 6,
  "freq": 63
},
{
  "point": 7,
  "freq": 80
},
{
  "point": 8,
  "freq": 100
},
{
  "point": 9,
  "freq": 125
},
{
  "point": 10,
  "freq": 160
},
{
  "point": 11,
  "freq": 200
},
{
  "point": 12,
  "freq": 250
},
{
  "point": 13,
  "freq": 315
},
{
```

```
"point": 14,  
"freq": 400  
},  
{  
  "point": 15,  
  "freq": 500  
},  
{  
  "point": 16,  
  "freq": 630  
},  
{  
  "point": 17,  
  "freq": 800  
},  
{  
  "point": 18,  
  "freq": 1000  
},  
{  
  "point": 19,  
  "freq": 1250  
},  
{  
  "point": 20,  
  "freq": 1600  
},  
{  
  "point": 21,  
  "freq": 2000  
},  
{  
  "point": 22,  
  "freq": 2500  
},  
{  
  "point": 23,  
  "freq": 3150
```

```
    },  
    {  
      "point": 24,  
      "freq": 4000  
    },  
    {  
      "point": 25,  
      "freq": 5000  
    },  
    {  
      "point": 26,  
      "freq": 6300  
    },  
    {  
      "point": 27,  
      "freq": 8000  
    },  
    {  
      "point": 28,  
      "freq": 10000  
    },  
    {  
      "point": 29,  
      "freq": 12500  
    },  
    {  
      "point": 30,  
      "freq": 16000  
    },  
    {  
      "point": 31,  
      "freq": 20000  
    }  
  ]  
}  
JSON format for spectrogram  
Sample1:  
{
```

```
"spectrogram": [  
  {"time": 0, "frequency": 100, "intensity": 0.1},  
  {"time": 1, "frequency": 100, "intensity": 0.2},  
  {"time": 2, "frequency": 100, "intensity": 0.3},  
  {"time": 3, "frequency": 100, "intensity": 0.4},  
  {"time": 4, "frequency": 100, "intensity": 0.5},  
  {"time": 0, "frequency": 200, "intensity": 0.2},  
  {"time": 1, "frequency": 200, "intensity": 0.3},  
  {"time": 2, "frequency": 200, "intensity": 0.4},  
  {"time": 3, "frequency": 200, "intensity": 0.5},  
  {"time": 4, "frequency": 200, "intensity": 0.6},  
  {"time": 0, "frequency": 300, "intensity": 0.3},  
  {"time": 1, "frequency": 300, "intensity": 0.4},  
  {"time": 2, "frequency": 300, "intensity": 0.5},  
  {"time": 3, "frequency": 300, "intensity": 0.6},  
  {"time": 4, "frequency": 300, "intensity": 0.7},  
  {"time": 0, "frequency": 400, "intensity": 0.4},  
  {"time": 1, "frequency": 400, "intensity": 0.5},  
  {"time": 2, "frequency": 400, "intensity": 0.6},  
  {"time": 3, "frequency": 400, "intensity": 0.7},  
  {"time": 4, "frequency": 400, "intensity": 0.8},  
  {"time": 0, "frequency": 500, "intensity": 0.5},  
  {"time": 1, "frequency": 500, "intensity": 0.6},  
  {"time": 2, "frequency": 500, "intensity": 0.7},  
  {"time": 3, "frequency": 500, "intensity": 0.8},  
  {"time": 4, "frequency": 500, "intensity": 0.9}  
]  
}
```

Sample2:

Below deprecated

.....

data_unstructured

PK

datasource_id

dataasource_deploy_id

datasource_deploy_sensors_id

capture_date

capture_time

depth

raw_data_loc

post_process_data_loc

1D_31_values

2D_array

description

created_by

created_at

modified_by

modified_at

active

.....

- data_structured_store_id (PK)
- dataasource_deploy_id
- datasource_deploy_sensors_id [like CTD1, CTD2, EMC1, EMC2,.....]
- capture_date
- capture_time
- depth
- raw_data_loc (corresponding file only one? for CTD1 one raw data file loc? or for each parameter current speed/current direction one file?)
- post_process_data_loc
- accept_or_discard
- description
- created_by
- created_at
- modified_by

modified_at
active

data_structured_params

The value of each parameter for the data received in DRC for specific data source deployment

- data_structured_param_id (PK)
- data_structured_store_id (reference to sensor data file received for a data source deployment; such as CTD1 data received from a deployment for a specific date and time)
- instr_param_id
- qc1
- qc2
- qc3
- mean
- curtosis
- percentile
- feature (what type of data?)
- description
- created_by
- created_at
- modified_by

modified_at
active

mission_deploy_id (PK)
ds_id
instr_id (configuring instruments for each deployment)
count
deployment_datetime
active_datetime
description
created_by
created_at
modified_by
modified_at
active

Data:

ds_deploy_id	ds_id	instr_id	count	deployment_datetime
1	1	3	1	

mission_depl_sensors

miss_depl_sen_id (PK)
mission_deploy_id
ds_source_ids

deploy_sensor_id

deploy_sensor_name (CTD-1, CTD-2) (auto generated name) – Any specific info for each sensor needed, like the depth at which they are deployed? different for different instrument ?

description

created_by

created_at

modified_by

modified_at

active

Field	Data Type	Constraints	Description
mission_deployment_id	NUMBER	PRIMARY KEY	The unique identifier for data source
mission_id			
deployment_datetime			
active_datetime			
description			
created_by			
created_at			
modified_by			
modified_at			
active			

dataasource_deploy_id	deploy_sensor_id	deploy_sensor_name	description	
1	1	3	1	

data_structured_store

If parameter wise different file, the file locations need to move to the other table.

{ "qc1": , "qc2": , "qc3": , "<instr_param_id>:" <value> }

- data_structured_store_id (PK)
- dataasource_deploy_id
- datasource_deploy_sensors_id [like CTD1, CTD2, EMC1, EMC2,.....]
- capture_date
- capture_time
- depth
- raw_data_loc (corresponding file only one? for CTD1 one raw data file loc? or for each parameter current speed/current direction one file?)
- post_process_data_loc
- accept_or_discard
- description
- created_by
- created_at
- modified_by
- modified_at
- active

data_structured_params

The value of each parameter for the data received in DRC for specific data source deployment

- data_structured_param_id (PK)
- data_structured_store_id (reference to sensor data file received for a data source deployment; such as CTD1 data received from a deployment for a specific date and time)

- instr_param_id
- qc1
- qc2
- qc3
- mean
- curtosis
- percentile
- feature (what type of data?)
- description
- created_by
- created_at
- modified_by
- modified_at
- active
-

data_unstructured

PK

datasource_id

dataasource_deploy_id

datasource_deploy_sensors_id

capture_date

capture_time

depth

raw_data_loc

post_process_data_loc

1D_31_values

2D_array

description

created_by

created_at

modified_by

modified_at

active

conf_datamodes

The table keeps various data modes used in the system along with its sensors from which different types of data can be collected for marine data analysis. Buoys and ships are different data modes which along with various sensors can provide data to understand and monitor marine conditions.

Field	Data Type	Constraints	Description
datamode_id	NUMBER	PRIMARY KEY	The unique identifier for data modes such as Buoy or Ship
datamode_name	VARCHAR(200)		An identifying name for the data mode such as a Buoy name or Ship Name (BUOY NPOL KOCHI)
datamode_type_id	NUMBER	FK	Reference identifier as data mode is a buoy or ship
sensor_id	ARRAY		An array of sensor IDs equipped with data mode such as a specific buoy or ship

inst_id	NUMBER	FK	The institution to which the data mode is being attached. A redundant information which can be retrieved through programme_id for easy data access
programme_id	NUMBER	FK	The programme/mission/project to which the data source is associated with
description	VARCHAR(200)		A description field
created_by	NUMBER	REFERENCES acs_users(us er_id)	The user who created the record
created_at	TIMESTAMP	DEFAULT SYSTIMESTA MP	The date and time at which the record was created
modified_by	NUMBER	REFERENCES acs_users(us er_id)	The user who modified the record
modified_at	TIMESTAMP	DEFAULT NULL	The date and time at which the record was modified
active	CHAR(1)	CHECK (active IN 'Y', 'N'); DEFAULT 'Y'	Whether the record is active or not

conf_datamode_types

Field	Data Type	Constraints	Description
datamode_type_id	NUMBER	PRIMARY KEY	The unique identifier for data mode type
datamode_type_name	VARCHAR(200)		The data mode type such as Buoy and Ship
created_by	NUMBER	REFERENCES acs_users(user_id)	The user who created the record
created_at	TIMESTAMP	DEFAULT SYSTIMESTAMP	The date and time at which the record was created
modified_by	NUMBER	REFERENCES acs_users(user_id)	The user who modified the record
modified_at	TIMESTAMP	DEFAULT NULL	The date and time at which the record was modified
active	CHAR(1)	CHECK (active IN ('Y', 'N')); DEFAULT 'Y'	Whether the record is active or not

conf_sensors

The table keeps a list of sensors that can be equipped with data modes such as buoys or ships.

Field	Data Type	Const raints	Description
sensor_id	NUMBER	PRIMARY KEY	The unique identifier for various sensors that can be equipped with a data mode such as buoy or ship
sensor_name	VARCHAR(200)		Name of sensor such as a Hydro Sensor,
description	VARCHAR(200)		description field
created_by	NUMBER	REFERENCES acs_users(user_id)	The user who created the record
created_at	TIMESTAMP	DEFAULT SYSTIMESTAMP	The date and time at which the record was created
modified_by	NUMBER	REFERENCES acs_users(user_id)	The user who modified the record
modified_at	TIMESTAMP	DEFAULT NULL	The date and time at which the record was modified
active	CHAR(1)	CHECK (active IN ('Y', 'N')); DEFAULT 'Y'	Whether the record is active or not

conf_datasources

The table keeps a list of data sources from where data can enter the system.

Field	Data Type	Const raints	Description
datasource_id	NUMBER	PRIMARY KEY	The unique identifier for data source

datasource_name	VARCHAR(200)		Name of datasource (Ocean MET SATCOM Live, Buoy Status SATCOM Live, Sensor Status SATCOM Live, Camera Live, Acoustic SATCOM Live, Ocean MET HDD, Sensor Status HDD, Acoustic HF, Acoustic LF)
datamode_id		FK	Reference to data mode; the data source belongs to which data mode.
datasource_sensors	ARRAY		An array of IDs on sensors from which data can be received for this data source
data_type	CHAR(1)		Data structured or unstructured. S for Structured and U for unstructured
data_transfer_mode	CHAR(10)		Whether data transferred ONLINE or OFFLINE.
data_enc_status	CHAR(1)		Data encrypted or not. E for Encrypted and N for not encrypted. This will be applicable only for offline data. Any encryption information to store?
data_timeperiod	VARCHAR(200)		Each file received with how long data (Each file received will have continuous data for an Acoustic SATCOM Live)
data_drc_receive_frequency	VARCHAR(200)		The time frequency at which file received in DRC. It will be continuous for Acoustic SATCOM Live and for Ocean MET SATCOM, it will be 30 minutes.
description	VARCHAR(200)		Description field
created_by	NUMBER	REFERENCES acs_users(us er_id)	The user who created the record

created_at	TIMESTAMP	DEFAULT SYSTIMESTAMP	The date and time at which the record was created
modified_by	NUMBER	REFERENCES acs_users(us er_id)	The user who modified the record
modified_at	TIMESTAMP	DEFAULT NULL	The date and time at which the record was modified
active	CHAR(1)	CHECK (active IN ('Y', 'N')); DEFAULT 'Y'	Whether the record is active or not

Sample Data

datasource_name	datamode_id	data_type	data_transfer_mode	data_enc_status	data_timeperiod	data_direct_receive_frequency
Ocean MET SATCOM Live	1	S	ONLINE	NULL	30min	LIVE
Buoy Status SATCOM Live	1	S	ONLINE	NULL		LIVE
Sensor Status SATCOM Live	1	S	ONLINE	NULL	30min	LIVE
Camera Live	1	S	ONLINE	NULL		LIVE
Acoustic SATCOM Live	1	U	ONLINE	NULL		LIVE

Acoustic HF@Cont	1	U	OFFLINE	E	Continuous	1month
Acoustic LF@Cont	1	U	OFFLINE	E	Continuous	1month
Acoustic Live@Cont	1	U	OFFLINE	E	Continuous	1month
Ocean MET HDD@1min	1	S	OFFLINE	E	1min	1month
Sensor Status HDD@1min	1	S	OFFLINE	E	1min	1month
Sensor Status SATCOM @30min	1	S	OFFLINE	E	30min	1month
Ocean MET SATCOM@30min	1	S	OFFLINE	E	30min	1month
Camera HDD	1	S	OFFLINE	N	1min	1month
Camera Live	1	S	OFFLINE	N	30min	1month
Buoy HDD@1min	1	S	OFFLINE	N	1min	1month
AIS	1	S	OFFLINE	N		
Buoy SATCOM@30min	1	S	OFFLINE	N	30min	1month
NCMRWF	1	S	OFFLINE	N		

ECMWF	1	S	OFFLINE	N		
Satellite	1	S	OFFLINE	N		
Deep Water surface Buoy	1	S	OFFLINE	N		

conf_institution

Field	Data Type	Constraints	Description
inst_id	NUMBER	PRIMARY KEY	The unique identifier for institutions from where data can be received in the system
inst_name	VARCHAR2(200)		The name of institution
inst_address	VARCHAR2(200)		
phone	NUMBER		
created_by	NUMBER	REFERENCES acs_users(user_id)	The user who created the record
created_at	TIMESTAMP	DEFAULT SYSTIMESTAMP	The date and time at which the record was created
modified_by	NUMBER	REFERENCES acs_users(user_id)	The user who modified the record
modified_at	TIMESTAMP	DEFAULT NULL	The date and time at which the record was modified
active	CHAR(1)	CHECK (active IN ('Y', 'N')); DEFAULT 'Y'	Whether the record is active or not

conf_programmes

The table holds a list of programmes/missions/projects executed from different institutions.

Field	Data Type	Constraints	Description
programme_id	NUMBER	PRIMARY KEY	The unique identifier for the programme/mission/project being executed from an institution
programme_name	VARCHAR(300)		The name of programme/mission/project
inst_id	NUMBER		The institution which is managing and executing the project
created_by	NUMBER	REFERENCES acs_users(user_id)	The user who created the record
created_at	TIMESTAMP	DEFAULT SYSTIMESTAMP	The date and time at which the record was created
modified_by	NUMBER	REFERENCES acs_users(user_id)	The user who modified the record
modified_at	TIMESTAMP	DEFAULT NULL	The date and time at which the record was modified
active	CHAR(1)	CHECK (active IN ('Y', 'N')); DEFAULT 'Y'	Whether the record is active or not

datasource_proc_pl

The table keeps a pipeline of processes to be applied on data coming from each datasource. This will include quality check algorithms, pre-processing algorithms and analysis/modelling algorithms to be applied on each data entering the system.

Field	Data Type	Constraints	Description

data_unstruct_repository

The table holds details of unstructured data received in the system such as Acoustic data from offshore. The details of data received through both online and offline ways are handled here. The header_info can be separate columns if it contains data that is frequently being accessed. Another approach can be separate columns for meta data common to all unstructured data and move others to a JSON object.

Field	Data Type	Constraints	Description
data_unstruct_repository_id	NUMBER	PRIMARY KEY	The unique identifier for a data file representing a chunk of data received through online or offline from a particular data source
datasource_id			Reference to the data source from where the data is coming from
pre_crypto_data			Any output, results, or status log to be kept in DB. A separate log aggregation system such as Loki to be kept for detailed logs. encrypted data to store? both encrypted raw and decrypted raw to keep?
post_crypto_data			Any output, results, or status log to be kept in DB. A separate log aggregation system such as Loki to be kept for detailed logs

header_info			A JSON object of header properties and their value. Separate columns can also be kept for frequently accessed columns and rest in JSON format. A corresponding JSON schema may be kept in the database against which each value can be validated.
quality_chk_info			Data quality information for the incoming data. QC1 done at the buoy hardware. The value from header kept here. May be a json with pre-defined schema. { "qc1": 23.5, "qc2": 45.9, }
pre_process_info			The results for pre-processing of data. May be a json with pre-defined schema
mod_anl_info			The results for modeling or analysis done on data. May be a json with pre-defined schema
error_flag			An error flag based on quality check of received data. Ex.Values ?
data_status			A value indicating whether to consider or discard the data for further processing or analysis. Ex. ACCEPT or DISCARD?

raw_store_loc			The storage location for the data (link to NAS). May be an unstructured format. NAS may be with a folder structure for keeping data subfolders for raw, processed,...
raw_struc_store_loc			The storage location for the data (link to NAS). May be a structured format. NAS may be with a folder structure for keeping data subfolders for raw, processed,...
rec_datetime			The date and time which the data entered the system
created_by	NUMBER	REFERENCES acs_users(user_id)	The user who created the record
created_at	TIMESTAMP	DEFAULT SYSTIMESTAMP	The date and time at which the record was created
modified_by	NUMBER	REFERENCES acs_users(user_id)	The user who modified the record
modified_at	TIMESTAMP	DEFAULT NULL	The date and time at which the record was modified
active	CHAR(1)	CHECK (active IN ('Y', 'N')); DEFAULT 'Y'	Whether the record is active or not

conf_dashboard

The table holds details of dashboards created using Grafana dashboard visualization platform. There will be a fixed number of dashboard screens configured in Grafana along with retrieval APIs and layouts arranged as per defined requirements. In Grafana, each dashboard is configured through a dashboard JSON. The JSON model is at <https://grafana.com/docs/grafana/latest/dashboards/build-dashboards/view-dashboard-json-model/>. The

dashboard JSON for the configured screens will be kept in a database table CONF_DASHBOARDS with each dashboard having two records one for master and other one for the currently live dashboard setup for visualization.

Grafana currently does not have an option of hiding the visibility of panels.

Hence, the panel visibility is managed programmatically with the following activities:

The users will be presented with a list of dashboards in master mode. On selecting a dashboard, users will be presented with a list of panels configured in the selected dashboard with the current visibility status of panels fetched from dashboards in live mode. Users can make configuration changes and the dashboard JSONs will be updated with the master dashboard as base. Grafana API calls will be made to change dashboard configuration on the server. The dashboard JSON for the newly configured dashboard will be updated in the database as a live mode record.

Field	Data Type	Constraints	Description
conf_dashboard_id	NUMBER	PRIMARY KEY	The unique identifier for dashboard screen
dashboard_title	VARCHAR(300)		The title text configured with dashboard
conf_gf_dashboard_id			The unique identifier for dashboard screen from Grafana
dashboard_json			The JSON data for the dashboard
mode	CHAR(1)	CHECK ('M','L')	The mode of dashboard configuration. M for Master Dashboard configuration and L for Live Dashboard configuration
created_by	NUMBER	REFERENCES acs_users(user_id)	The user who created the record
created_at	TIMESTAMP	DEFAULT SYSTIMESTAMP	The date and time at which the record was created
modified_by	NUMBER	REFERENCES acs_users(user_id)	The user who modified the record
modified_at	TIMESTAMP	DEFAULT NULL	The date and time at which the record was modified
active	CHAR(1)	CHECK (active IN ('Y', 'N')); DEFAULT 'Y'	Whether the record is active or not

conf_dashboard_panels

Field	Data Type	Constraints	Description
conf_dashboard_panel_id	NUMBER	PRIMARY KEY	The unique identifier for dashboard panel
conf_dashboard_id		REFERENCES CONF_DASHBOARD(co nf_dashboard_id)	reference to dashboard ID
panel_title			The panel title
data_span_period			The period for which data is fetched at a time and kept cache for sending as data segments in cycle like 15 minutes in acoustic noise data
data_refresh_period			The period for which data from cache which is fetched as in one data span to be sent to visualization dashboard in cycle like 1 min
created_by	NUMBER	REFERENCES acs_users(user_id)	The user who created the record
created_at	TIMESTAMP	DEFAULT SYSTIMESTAMP	The date and time at which the record was created
modified_by	NUMBER	REFERENCES acs_users(user_id)	The user who modified the record
modified_at	TIMESTAMP	DEFAULT NULL	The date and time at which the record was modified
active	CHAR(1)	CHECK (active IN ('Y', 'N')); DEFAULT 'Y'	Whether the record is active or not