Technical Review
on
Database Design and Development
for
Historical Korea Oceanographic/Coastal Data Sets

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Background

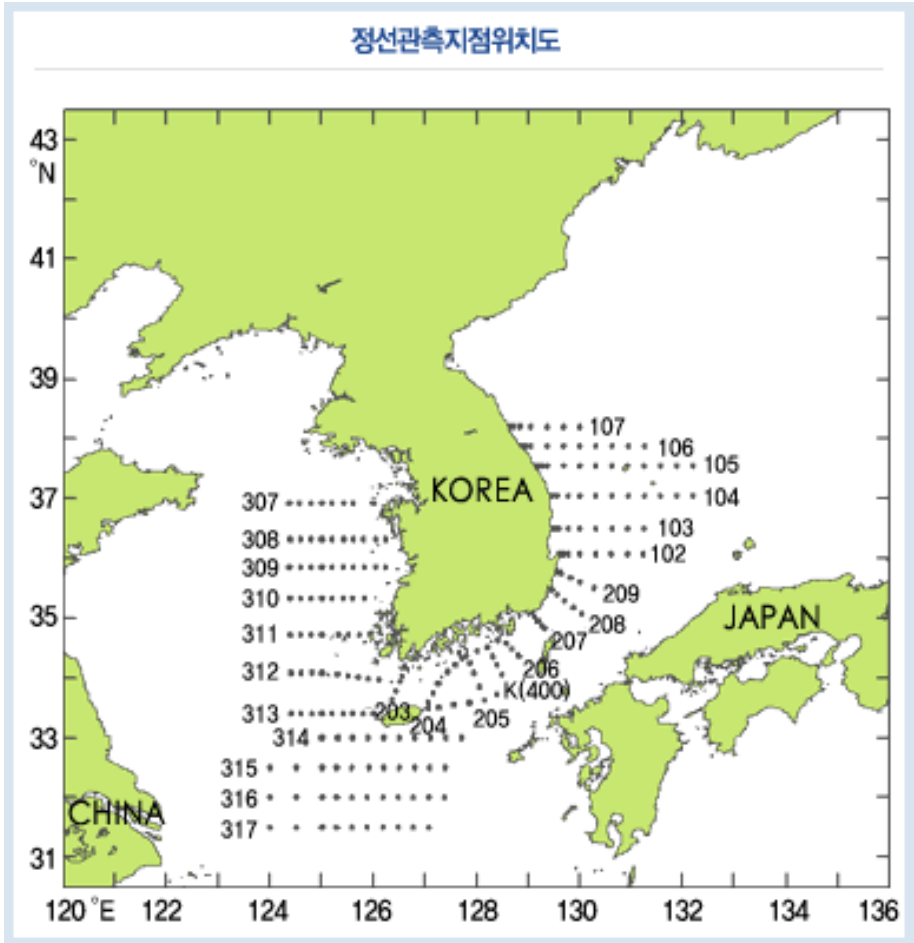
- The 5th Oceanographic Data Panel Meeting was held at National Fisheries Research Development and Institute (NFRDI) in Busan, Korea from Feb. 27 to Mar. 1, 2007.

- In an agreement between Korea Oceanographic Data Center (KODC) and NODC, I will assist KODC in developing an on-line database for two of their data sets.

- NODC will release these data sets to the public.

Serial Oceanographic Data (SOD)

NFRDI has been collecting various oceanographic and meteorological data from 175 stations of 22 lines in East, South, and West Seas six times per year (Feb., Apr., Jun., Aug., Oct., Dec.) and from 32 stations of 3 lines in north-east China Sea four times (Feb., May, Aug., Nov.) per year since 1951.



file format: http://portal.nfrdi.re.kr/envirodata/readme.txt

web site: http://portal.nfrdi.re.kr/envirodata?id=shorelineObserList

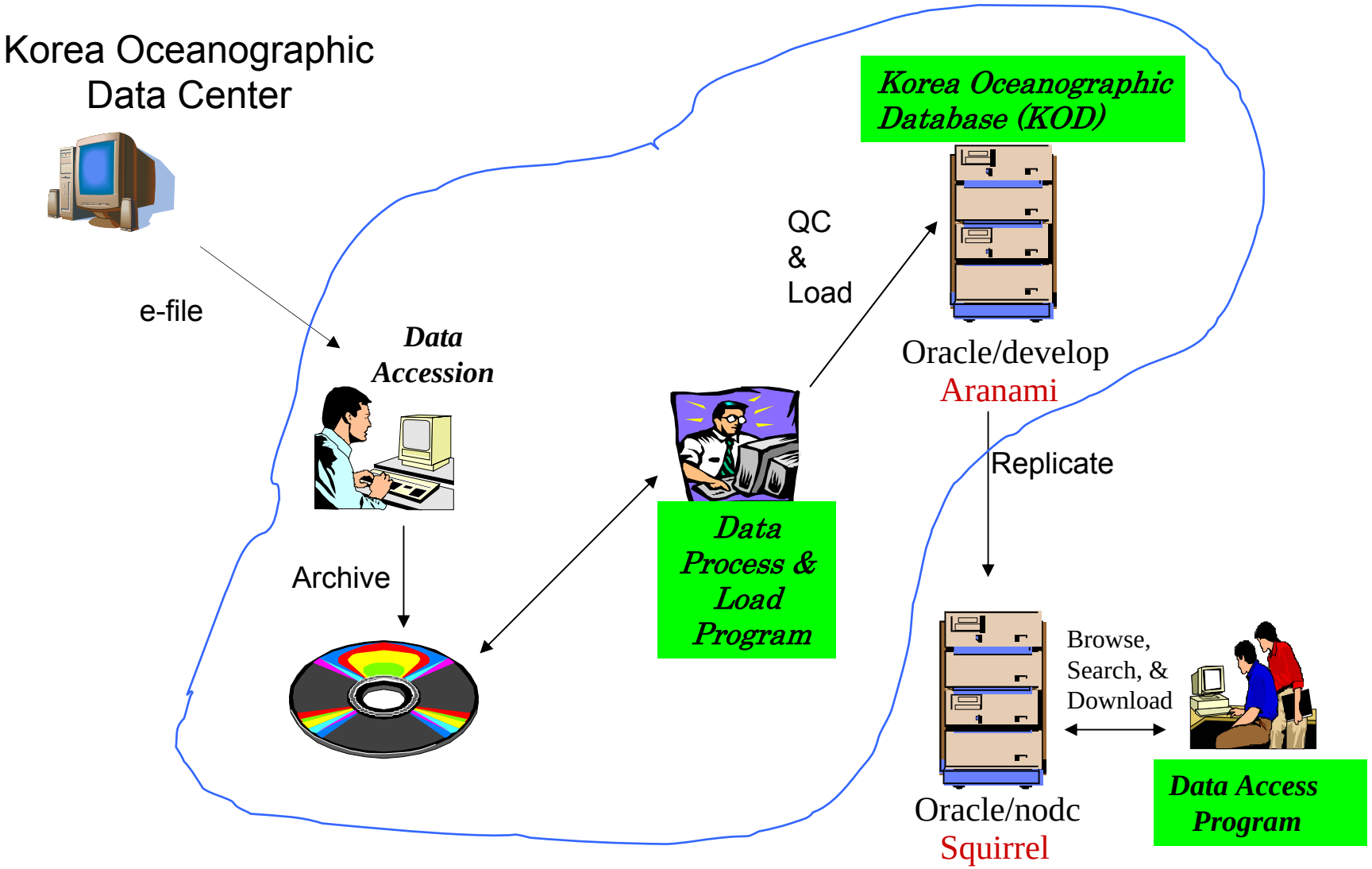
Coastal Observation Data (COD)

NFRDI has been measuring water temperature and various meteorological parameters at over 40 coastal stations at 10AM everyday since 1910.

File Format: position (POS), year (YEAR), month (MON), day (DAY), water temperature (SUON), air temperature (KION), wind direction (W-D), wind velocity (W-V: Beaufort Scale), cloud type (CLO), specific gravity (BIJUNG), (BISUON), wet bulb air temperature (WET)

web site: http://portal.nfrdi.re.kr/envirodata?id=shorelineObserList2

Data Flow, System, & Operations



- Used M/S Access for data process, QC, and load into Oracle
- Korea Oceanographic Database (KOD) in Oracle: 2 GByte
- QCed data (again) using Oracle SQL
- Database Tables

1. SOD: ~0.5M rows
   - linenstation
   - orig_surface, surface_v1, surface
   - orig_surface_misc, surface_misc_v1, surface_misc
   - orig_profile, profile_v1, profile

2. COD: ~0.7M rows
   - orig_coastal, coastal
   - station

Tables for SOD

SURFACE

obs_no	NUMBER(10) NOT NULL,
line_no	CHAR(3) NOT NULL,
station_no	CHAR(2) NOT NULL,
obs_date	DATE NOT NULL,
latitude	NUMBER(10, 5) NOT NULL,
longitude	NUMBER(10, 5) NOT NULL,
bottom_depth	NUMBER(4),
water_color	CHAR(2),
water_trans	NUMBER(3, 1),
wave_dir	CHAR(3),
swell_dir	CHAR(3),
sea_state	CHAR(1),
wind_dir	CHAR(3),
wind_force	CHAR(2),
bar_pressure	NUMBER(5, 1),
dry_bulb_air	NUMBER(4, 1),
wet_bulb_air	NUMBER(4, 1),
cloud_type	CHAR(2),
cloud_amount	CHAR(2),
weather	CHAR(2),

one-to-one

SURFACE_MISC

obs_no	NUMBER(10) NOT NULL,
line_no	CHAR(3) NOT NULL,
station_no	CHAR(2) NOT NULL,
obs_date	DATE NOT NULL,
latitude	NUMBER(10, 5) NOT NULL,
longitude	NUMBER(10, 5) NOT NULL,
file_name	VARCHAR2(20),
country_code	CHAR(2),
institute_code	CHAR(2),
ship_code	CHAR(2),
wind_sf	CHAR(1),
record_type	CHAR(1),
no_obs_depth	NUMBER(2),

one-to-many

PROFILE

obs_no	NUMBER(10) NOT NULL,
line_no	CHAR(3) NOT NULL,
station_no	CHAR(2) NOT NULL,
obs_date	DATE NOT NULL,
latitude	NUMBER(10, 5) NOT NULL,
longitude	NUMBER(10, 5) NOT NULL,
obs_depth	NUMBER(5) NOT NULL,
temperature	NUMBER(6, 2),
salinity	NUMBER(6, 3),
oxygen	NUMBER(5, 2),
phosphate	NUMBER(5, 2),
nitrite	NUMBER(5, 2),
silicate	NUMBER(5, 2),
nitrate	NUMBER(5, 2),
ph	NUMBER(5, 2),

Tables for SOD (continued)

LINENSTATION

line_no	CHAR(3) NOT NULL,
station_no	CHAR(2) NOT NULL,
lat_number	CHAR(5) NOT NULL,
lon_number	CHAR(6) NOT NULL,
lat_char	CHAR(8) NOT NULL.
lon_char	CHAR(9) NOT NULL
latitude	NUMBER(10, 5) NOT NULL,
longitude	NUMBER(10, 5) NOT NULL

```
102
09
36046
130369
36°04.6‘
130°36.9‘
36.07667
130.615
```

Tables for COD

COASTAL

row_no	NUMBER(10) NOT NULL,
station_id	CHAR(3) NOT NULL,
station_name	VARCHAR2(20) NOT NULL,
latitude	NUMBER(10, 5),
longitude	NUMBER(10, 5),
measurement_date	DATE NOT NULL,
water_temp	NUMBER(6, 2),
air_temp	NUMBER(6, 2),
wind_dir	VARCHAR2(4),
wind_velocity	VARCHAR2(2),
cloud_type	VARCHAR2(2),
spec_gravity	NUMBER(6, 2),
bisuon	NUMBER(6,2),
wet_bulb	CHAR(3)

STATION

station_id	CHAR(3) NOT NULL,
name	VARCHAR2(30) NOT NULL,
latitude	NUMBER(10, 5) NOT NULL,
longitude	NUMBER(10, 5) NOT NULL,
lat_char	VARCHAR2(9),
lon_char	VARCHAR2(10),
remark	VARCHAR2(50),
region	VARCHAR2(30)

What's next?

- Accessioned, but not released yet
- Joint data analysis
- Write reports/papers climate changes and sea environment changes
- Write a report/paper on data quality control
- Build a web site for data access
- Publish archival data held at NODC (i.e. release these data to the public)