Data format

- The OceanSites user's manual defines a common format for data exchange and lists the minimal metadata content for data to be exchanged. The format is built on NetCDF format and the community-supported Climate and Forecast standard (CF).

- In April 2006, following the 2nd data management meeting (Hawaii), a version 1.0 was adopted.

- Two years on, we may have to update OceanSites format to version 1.1.

Data format 1.1

- Main reasons for update :
  - Compliance with CF-1.1 released on January 2008
    - The title, institution, source, history, references and comment global attributes are necessary to follow the CF-1.1 convention.
  - Use ISO8601 for dates (strings)
    yyyy-mm-dd hh:mm:ssZ
  - Remove duplicate information between the global attribute section and the variable section
  - Better distinction between nominal locations and observed locations.
  - Use a new QC flag for nominal values (7?)
  - Possibility to split large files
  - Move parameter table in a separate file, that will be updated more frequently than the manual.

Other format changes ?

- Mentionned in Mathias review

OceanSites parameters

- Convention for parameter names, standard names and units
  - Parameter names
    - They are not strictly standardized, so that multiple variables containing the same physical quantity can be contained in a single file.
    - However, the parameter names are based in part on the group codes of the GF3 dictionnary (4 characters).
    - When necessary, a parameter name has a suffix that designates secondary parameters . The suffix starts with the character "_".
  - The NetCDF "standard_name" attribute contains the standardized parameter name, based on CF-1 convention.
  - The NetCDF "units" attribute are compliant with CF/COARDS/Udunits.

- Example
  - On a mooring, sea temperature measured by a series of Microcat CTD is reported as TEMP, with a standard name of SEA_WATER_TEMPERATURE.
  - Secondary temperature measurements performed by an oxygen sensor is reported as TEMP_DOXY with a standard name of SEA_WATER_TEMPERATURE.
  - For both measurement, the unit attribute is "degree_Celsius".

Parameter table

parameter	standard name	long_name	unit	comment	convention	created
AIRT	air_temperature	air temperature	degree_Celsius	-	-	01/03/2008
ATMP	air_pressure	atmospheric pressure	hectopascal			01/03/2006
ATMS	air_pressure_at_sea_level	atmospheric pressure at sea level	hectopascal			01/03/2006
CDIR	sea_water_direction	sea water direction	degree from north	-	-	01/03/2008
CNDC	sea_water_electrical_conductivity	sea water electrical conductivity	mho/meter			01/03/2006
CSPD	sea_water_speed	current speed	centimeter/second	better use HCSP (horizontal curren	-	01/03/2008
D	sea_water_sigma_theta	sigma-theta (potential density)	kg/m3	better use SWST ?	-	01/03/2008
DEPH	depth	depth below sea surface	meter			01/03/2006
DEWT	dew_point_temperature	Dew Point Temperature	degree_Celsius			01/03/2008
DOX2	dissolved_oxygen	dissolved oxygen	micromole/kg			01/03/2006
DOXY	dissolved_oxygen	dissolved oxygen	millimole/m3			01/03/2006
DRYT	dry_bulb_temperature	dry bulb temperature	degree_Celsius			01/03/2006
DYNHT	dynamic_height	dynamic height at sea surface referenced to 500db	centimeter	better use DYNH ?	-	01/03/2008
FLU2	fluorescence	fluorescence	milligram/m3			01/03/2006
HCSP	sea_water_speed	horizontal current speed ?	meter/second	Speed is the magnitude of velocity.		01/03/2006
HEAT	heat_content	upper ocean heat content from 0 to 300m depth	10**10 J/m2	-	-	01/03/2008
ISO17	isotherm_depth	17C isotherm depth	meter	-	-	01/03/2008
LW	surface_downwelling_longwave_flux_in_air	longwave radiation	Watt/m2	LINC long wave incoming radiation '	-	01/03/2008
OPBS	optical_backscattering_coefficient	optical backscattering coefficient	1			01/03/2006
PCO2	CO2_partial_pressure_in_dry/wet_gas	CO2 partial pressure in dry/wet gas	microatmosphere			01/03/2006
PRES	sea_water_pressure	sea water pressure	decibar			01/03/2006
PSAL	sea_water_salinity	sea water salinity	psu			01/03/2006
RAIN	rainfall_rate	rainfall rate	millimeter/hour	better use PRRT precipitation rate '	-	01/03/2008
RAIT	thickness_of_rainfall_amount	thickness of rainfall amount	meter	better use PRTH ?		01/03/2006
RELH	relative_humidity	relative humidity	%	-	-	01/03/2008
SDFA	surface_downwelling_shortwave_flux_in_air	surface downwelling shortwave flux in air	Watt/m2			01/03/2006
SRAD	isotropic_shortwave_radiance_in_air	shortwave radiation	Watt/m2			01/03/2008
SW	surface_downwelling_shortwave_flux_in_air	shortwave radiation	Watt/m2	-	-	01/03/2008
TEMP	sea_water_temperature	sea water temperature	degree_Celsius			01/03/2006
TIME	time	days since 1950-01-01 00:00:00	day			26/03/2008
UCUR	eastward_sea_water_velocity	zonal current	centimeter/second	-	-	01/03/2008
UWND	eastward_wind	zonal wind	meter/second	-	-	01/03/2008
VAVH	sea_surface_wave_significant_height	Significant Wave Height (AVER. HEIGHT HIGHEST 1/3 WAVE ?)	meter	Spectrally derived average height of	WMO-No. 702 G	01/03/2008
VAVT	sea_surface_wave_zero_upcrossing_period	Average Wave Period (AVER. PERIOD HIGHEST 1/3 WAVE ?)	second	Spectrally derived average wave per	WMO-No. 702 G	01/03/2008
VCUR	northward_sea_water_velocity	meridional current	centimeter/second	Replace with NSCT ?	-	01/03/2008
VDEN	sea_surface_wave_variance_spectral_density	Spectral Wave Density	m2/Hertz	Energy for each frequency compon	WMO-No. 702 G	01/03/2008
VDIR	sea_surface_wave_from_direction	Wave Direction rel. true north	degrees	Spectral derived wave direction at th	WMO-No. 702 G	01/03/2008
VWND	northward_wind	meridional wind	meter/second	-	-	01/03/2008
WDIR	wind_to_direction	wind direction (oceanographic convention, blowing to)	degree from north	-	-	01/03/2008
WSPD	wind_speed	horizontal wind speed	meter/second			01/03/2006
WSPD	wind_speed	wind speed	meter/second	-	-	01/03/2008
XPOS	longitude	buoy longitude	degree_east	-	-	01/03/2008
YPOS	latitude	buoy latitude	degree_north	-	-	01/03/2008
EWCT	eastward_sea_water_velocity	current east component	meter/second			03/04/2008
NSCT	northward_sea_water_velocity	current north component	meter/second			03/04/2008

XXXX parameter code not yet standardized (GF3 or CF-1.1)