Science Keywords requested for the MERRA-2 Ocean Products:

- EARTH SCIENCE > OCEAN > LAND/OCEAN/ICE MASK
- EARTH SCIENCE > OCEAN > LAND/OCEAN/ICE FRACTION
- EARTH SCIENCE > LAND SURFACE > LAND/OCEAN/ICE MASK
- EARTH SCIENCE > LAND SURFACE > LAND/OCEAN/ICE FRACTION

  Justification: These keywords are used to identify the type of grid location.

  Add them to the following collections → the corresponding variable name(long_name):

  msk_inst_con_glo_T1440x1080_z50 → ocean_mask ("Mom4_ocean_mask_at_t-points")

  aer_tavg_1mo_glo_L720x361_p27 → lwi ("land(1)_water(0)_ice(2)_flag")

  aer_tavg_1mo_glo_L720x361_slv → lwi ("land(1)_water(0)_ice(2)_flag")

  ocn_tavg_1mo_glo_L720x361_slv → fraction_of_gridbox_covered_by_ocean, ocean_mask

- EARTH SCIENCE> ATMOSPHERE > CLOUDS> CLOUD MICROPHYSICS > ICE NUCLEI

  Justification: This keyword describes the unique properties of cloud formations.

  Add it to the following collection → the corresponding variable name (long_name):

  mst_tavg_1mo_glo_L720x361_p49 → INC_NUC ("Nucleated ice crystal concentration (grid_avg)")

- EARTH SCIENCE> ATMOSPHERE > ATMOSPHERIC TEMPERATURE > AIR TEMPERATURE

  Justification: This keyword is a generic keyword for air temperature without specifying the altitude.

  Add it to the following collections → the corresponding variable name(long_name):

  atm_inst_6hr_glo_L720x361_p49 → T ("air_temperature")

  iau_inst_6hr_glo_L720x361_v72 → DTDTANA ("total_temperature_analysis_tendency")

  sfc_tavg_1hr_glo_L720x361_sfc → T10M ("10-meter_air_temperature") and T2M("2-meter_air_temperature")

- EARTH SCIENCE> OCEANS> SALINITY/DENSITY > SALT FLUX

  Justification: this keyword describes one kind of oceanic flux, salt flux.

Add it to the following collections → the corresponding variable name(long_name):

aof_tavg_1mo_glo_T1440x1080_slv → salt_flux_to_ocean ("salt_flux_to_ocean")

ocn_tavg_1mo_glo_L720x361_slv → salt_flux

ocn_tavg_1mo_glo_T1440x1080_slv → salt_flux_due_to_ice_dynamics

- EARTH SCIENCE> OCEANS> OCEAN HEAT BUDGET > HEAT FLUX > SENSIBLE HEAT FLUX

  Justification: This keyword is needed since it is one kind of heat flux.

  Add it to the following collections → the corresponding variable name(long_name):

  aof_tavg_1mo_glo_T1440x1080_slv → sensible_heat_flux

  sfc_tavg_3hr_glo_L720x361_sfc → HFLUXWTR ("open_water_upward_sensible_heat_flux")

- EARTH SCIENCE> OCEANS> PRECIPITATION > SOLID PRECIPITATION > SNOW

  EARTH SCIENCE> OCEANS> PRECIPITATION > LIQUID PRECIPITATION > RAINFALL

  Justification: These two keywords are needed to describe the precipitation types over the ocean

  Add it to the following collections → the corresponding variable name(long_name):

  aof_tavg_1mo_glo_T1440x1080_slv → ocean_snowfall

  ocn_tavg_1mo_glo_L720x361_slv → ocean_snowfall

  ocn_tavg_1mo_glo_T1440x1080_slv → ocean_rainfall, ocean_snowfall

  ith_tavg_1dy_glo_T1440x1080_slv → snow_fall

- EARTH SCIENCE> OCEANS> OCEAN WINDS > WIND VELOCITY / SPEED

  Justification: This keyword is needed to describe the key features of ocean wind

  Add it to the following collections → the corresponding variable name(long_name):

  ocn_tavg_1mo_glo_L720x361_slv → surface_Agrid_eastward_velocity (for ocean)

  ocn_tavg_1mo_glo_T1440x1080_slv → ocean_velocity

  trb_tavg_1mo_glo_L720x361_p49 → entrainment_velocity_from_radiation

  sfc_tavg_3hr_glo_L720x361_sfc → surface_ventilation_velocity

- EARTH SCIENCE> OCEANS> SEA ICE > AREA
- EARTH SCIENCE> OCEANS> SEA ICE > VOLUME

Justification: This keyword is needed to describe the properties of sea ice.

Add them to the following collections → the corresponding variable name(long_name):

ict_inst_6hr_glo_L1440x721_slv → AICEN ("seaice_area_for_each_category"), VICEN ("seaice_volume_for_each_category")

- EARTH SCIENCE> CRYOSPHERE> SEA ICE> STRAIN RATES
- EARTH SCIENCE> CRYOSPHERE> SEA ICE> STRESS
- EARTH SCIENCE> CRYOSPHERE> SEA ICE> STRENGTH

Justification: The keywords above describe fundamental features of sea ice.

Add them to the following collections → the corresponding variable name(long_name):

idn_tavg_1dy_glo_T1440x1080_slv → SHEAR ("strain_rate_II_component"), STRCORX ("stress_due_to_coriolis_effect_x_direction"), STRENGTH ("ice_strength")

- EARTH SCIENCE> CRYOSPHERE> SEA ICE> HEAT FLUX> SENSIBLE HEAT FLUX
- EARTH SCIENCE> CRYOSPHERE> SEA ICE> HEAT FLUX> LATENT HEAT FLUX
- EARTH SCIENCE> CRYOSPHERE> SEA ICE> HEAT FLUX> LONGWAVE HEAT FLUX
- EARTH SCIENCE> CRYOSPHERE> SEA ICE> HEAT FLUX> SHORTWAVE HEAT FLUX

Justification: The keywords above describe fundamental features of sea ice.

Add them to the following collections → the corresponding variable name(long_name):

ifx_tavg_1dy_glo_T1440x1080_slv →

FCONDBOT ("conductive_heat_flux_at_ice_bottom_surface"),

FCONDTOP ("conductive_heat_flux_at_ice_top_surface"),
FSURFICE("total_surface_heat_flux_over_the_ice_tile"),
HLATICE("sea_ice_latent_energy_flux"),
HLWUPICE("sea_ice_outgoing_longwave_flux"),
LWDNSRF("surface_downward_longwave_flux"),
LWNDICE("sea_ice_net_downward_longwave_flux"),
SHICE("sea_ice_upward_sensible_heat_flux"),
SWDNSRF("surface_downward_shortwave_flux"),

SWNDICE("sea_ice_net_downward_shortwave_flux")

sfc_tavg_3hr_glo_L720x361_sfc → HFLUXICE ("sea_ice_upward_sensible_heat_flux")

- EARTH SCIENCE> LAND SURFACE > HEAT FLUX > SENSIBLE HEAT FLUX
- EARTH SCIENCE> LAND SURFACE > HEAT FLUX > LATENT HEAT FLUX
- EARTH SCIENCE> LAND SURFACE > HEAT FLUX > LONGWAVE HEAT FLUX
- EARTH SCIENCE> LAND SURFACE > HEAT FLUX > SHORTWAVE HEAT FLUX

Justification: The keywords above describe fundamental heat flux over land

Add them to the following collections → the corresponding variable name(long_name):

sfc_tavg_3hr_glo_L720x361_sfc →

LHLAND("Latent_heat_flux_land"),

SHLAND"Sensible_heat_flux_land"