Dear professor,

Thank you very much. We are studying the semantic relatedness between keyword sets of metadata of geographic data. Now we need a group of baseline data set to evaluate the algorithms in terms of precision. Please help us rate the scores of semantic relevance for the following 30 pairs of keyword sets which are from the metadata of geographic data in FAO GeoNetwork (<http://www.fao.org/geonetwork/srv/en/main.home>/) and NASA’s SED-AC (<http://sedac.ciesin.columbia.edu/>).

**Please rate the score of relevance with integral values ranging from 0 to 4**, in which 0 means no semantic relevance at all, and 4 perfect the same meaning between the two keyword sets. The higher the score is, the more semantically relevant it is between the keyword sets.

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| --- | --- | --- | --- | --- |
| **ID** | **Keyword set one** | **Keyword set two** | **Relatedness (0-4)** | **Notes** |
|  | Manure, Nitrogen | Fertilizers, Nitrogen | 3 |  |
|  | Particulate Matter, PM2.5, Remote Sensing, Satellite Imagery, Environmental Indicators, MODIS, MISR, Aerosol Optical Depth, SeaWIFS | Cities, Landsat, Remote Sensing, Satellite Imagery, Urban Landsat | 3 |  |
|  | Global Rural-Urban Mapping Project, GRUMPv1, National Administrative Boundaries, Cartographic Layers, Global Population | Global Rural-Urban Mapping Project, GRUMPv1, Coastlines | 3 | GRUMP: The Global Rural-Urban Mapping Project |
|  | Soil carbon gap, cropland | croplands degradation, soil carbon gap, high poverty, cropland | 3 |  |
|  | Croplands, MODIS, SPOT, Sustainability, Sustainability Indicators | Pasture, MODIS, SPOT, Sustainability, Sustainability Indicators | 4 |  |
|  | forest, ecology | Malnutrition, Underweight | 0 |  |
|  | sheep, small ruminant, Livestock, density | Land Surface Temperatures, LST, Climate | 0 | LST: Land Surface Temperature |
|  | Fertilizers, Phosphorus | Fertilizers, Nitrogen | 3 |  |
|  | sheep , small ruminant , Livestock, density | pasture , grazing land , livestock | 2 |  |
|  | Infant Death, Infant Mortality Rate | Climate, Millenium Ecosystem Assessment, Protected Areas | 0 |  |
|  | sheep, small ruminant, Livestock, density | poultry, monogastric, livestock, density | 2 |  |
|  | sheep, small ruminant, Livestock, density | livestock, feed balance, livestock feed, livestock's long shadow, poultry, pig, pork, soymeal, soymeal feed, surplus, estimate | 1 |  |
|  | GPW, GPW Version 4, GPW V4, GPWv4, Gridded Population of the World, Land and Geographic Unit Area Grids, Mean Administrative Unit Areas, Global Area Grid | Dams, Reservoirs | 0 | GPW: Gridded Population of the World |
|  | Epidemiology, Hospitals, Life Sciences, Medical Sciences, Environment & Health | Cost of Living, Demography, Economics, Geography, Natural Resources, Social Welfare, Population | 2 |  |
|  | sheep, small ruminant, Livestock, density | cattle, bovine, large ruminant, livestock, density | 2 |  |
|  | sheep, small ruminant, Livestock, density | Goat, Small Ruminant, Livestock, density | 3 |  |
|  | Eggs, Fiber, Human Appropriation, Human Consumption, Meat, Milk, Net Primary Productivity, Paper, Vegetal Food, Wood | Coastal Ecosystem, Cultivated Areas Classification, Forest Ecosystem, Island Ecosystem, Mountain Ecosystem, Polar Ecosystem, Woodland Classification | 1 |  |
|  | biodiversity hotspots, low agricultural suitability, high poverty, cropland | Hazard Frequency, Hazard Distribution, Hazards, Hotspots, Hazard Vulnerability | 1 |  |
|  | Winter Cropped Areas | Projected expansion of cropland and pasture, neotropics, cropland | 2 |  |
|  | Hazards, Hotspots, Mortality Risks, Mortality Distribution, Tropical Storms, Hazard Vulnerability, Health | Economic Loss, Economic Risks, GDP, Hazards, Hotspots, Hazard Vulnerability | 3 |  |
|  | Census Block, Households, Housing, Houston, Race, U.S. Census | Global Rural-Urban Mapping Project, GRUMPv1, Coastlines | 2 | GRUMP: The Global Rural-Urban Mapping Project |
|  | biota, land cover, landcover, cropland | irrigation, land cover, land use, landcover, landuse, hydrology, cropland | 3 |  |
|  | Census, Street Intersections, Street Name, Population | pasture, grazing land, cropland | 0 |  |
|  | sheep, small ruminant, Livestock, density | sheep, small ruminant, Livestock, density | 4 |  |
|  | Land Surface Temperatures, LST, Climate | Urban Heat Island, Land Surface Temperatures, LST, Climate | 3 | LST: Land Surface Temperature |
|  | Infant Death, Infant Mortality Rate | Census, Demography, Geography, Localities, Municipalities, States, Population | 2 |  |
|  | Cropland, Degraded Lands, Forest Mask, Millenium Ecosystem Assesment, Rapid Land Cover Change | Climate, Millenium Ecosystem Assessment, Protected Areas | 2 |  |
|  | Population Count, Population Estimates, Population Time Series Estimates | SSPs, Population Estimates, Population Projection, Shared Economic Pathways | 3 | SSPs: The Global Population Projection Grids Based on Shared Socioeconomic Pathways |
|  | land use systems | unproductive land, land use, land cover | 2 |  |
|  | sub national boundaries, administrative, global, GAUL | SSPs, Population Estimates, Population Projection, Shared Economic Pathways | 1 | GAUL: Global Administrative Unit Layers  SSPs: The Global Population Projection Grids Based on Shared Socioeconomic Pathways |

Note:

MODIS: The moderate-resolution imaging spectroradiometer (MODIS) is a payload scientific instrument built by Santa Barbara Remote Sensing[1] that was launched into Earth orbit by NASA in 1999 on board the Terra (EOS AM) Satellite, and in 2002 on board the Aqua (EOS PM) satellite.

SPOT: (Satellite for observation of Earth) is a commercial high-resolution optical imaging Earth observation satellite system operating from space.

MISR: The multi-angle imaging spectroradiometer (MISR) is a scientific instrument on the Terra satellite launched by NASA on 18 December 1999. This device is designed to measure the intensity of solar radiation reflected by the Earth system (planetary surface and atmosphere) in various directions and spectral bands; it became operational in February 2000.

SeaWIFS: SeaWIFS (Sea-Viewing Wide Field-of-View Sensor) was a satellite-borne sensor designed to collect global ocean biological data. Active from September 1997 to December 2010, its primary mission was to quantify chlorophyll produced by marine phytoplankton (microscopic plants).

PM2.5: fine atmospheric particles with a diameter of 2.5 μm or less.