

Essence of Water

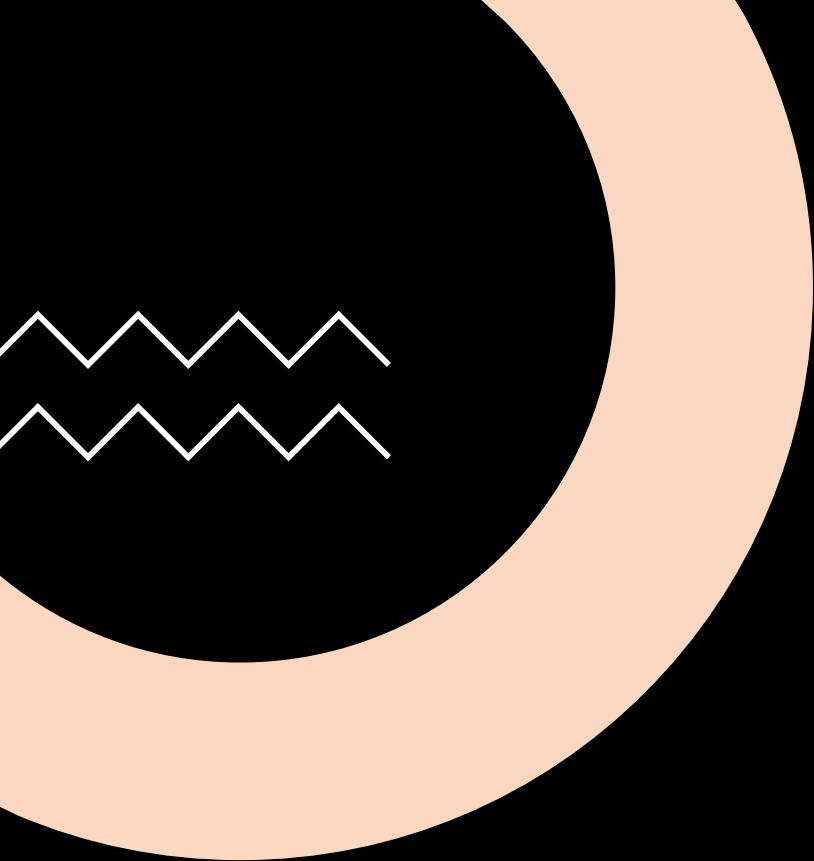
Sushel Unninayar¹

¹NASA/GSFC & KBR/ Morgan State University

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Abstract

A short poem to imagine the “essence” of water as it circulates through the Earth universe, synergistically supporting all environments and living ecosystems, forming, and shaping land and life. The poem links key elements of the interactive global water cycle and international programs to sustainably manage natural, and socioeconomic resources, given the challenge of climate change. The poem in awareness of: –Essential Water Variables (EWVs) of the Group on Earth Observations (GEO) Global Water Sustainability (GEOGLOWS) initiative; –Earth Observations (EO) for the Water-Energy-Food Nexus (EO4WEF) community activity; –UN Sustainable Development Goals (UN SDGs), –UNFCCC–Climate Change The poem hopes to bring water to the forefront of consciousness. Readers are invited to comment on the intangible “feelings” evoked by the poem.



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Sushel Unninayar, NASA/GSFC &
KBR/Morgan State University

“The Essence of Water”

[ED51C-01]



Abstract: Dissolving, Merging the Global Dimension

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--Essential Water Variables (EWVs) of the Group on Earth Observations (GEO) Global Water Sustainability (GEOGLOWS) initiative;

--Earth Observations (EO) for the Water-Energy-Food Nexus (EO4WEF) community activity;

--UN Sustainable Development Goals (UN SDGs). The poem hopes to bring water to the forefront of consciousness.

--UNFCCC--Climate Change

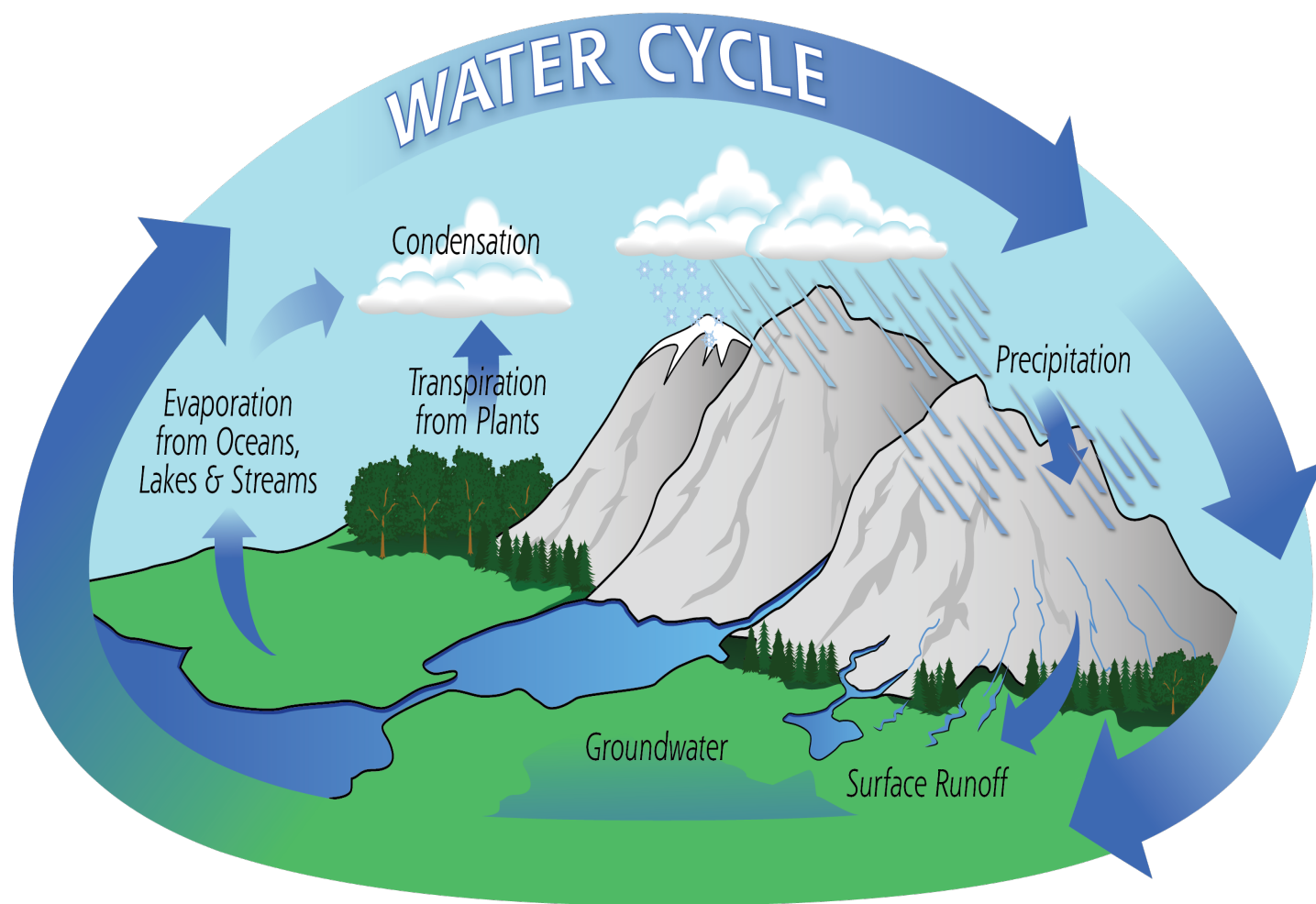
Readers are invited to comment on the intangible “feelings” evoked by the poem.

The Poem “The Essence of Water”; Dissolving the Global Dimension

**Water flows, the universe
Essential for life, the Earth
Carrier of energy, sustenance
Sustainability, maintenance
Primary and supplemental
Contributory, existential
Through land, ocean, air
Conscious, aware
Sometimes invisible
Always invincible
Land shaping, forming
Mountains and rivers reforming**

Essence of Water

**Forces acting over time
Creating the sublime
Nexus of food, water, energy
Climate change, synergy
Water strives
Ecosystems thrive
Reducing strife
Quality, improving life
Availability and accessibility
Goals for sustainability
Flowing across nations
Harmonization**



Linking Earth Elements

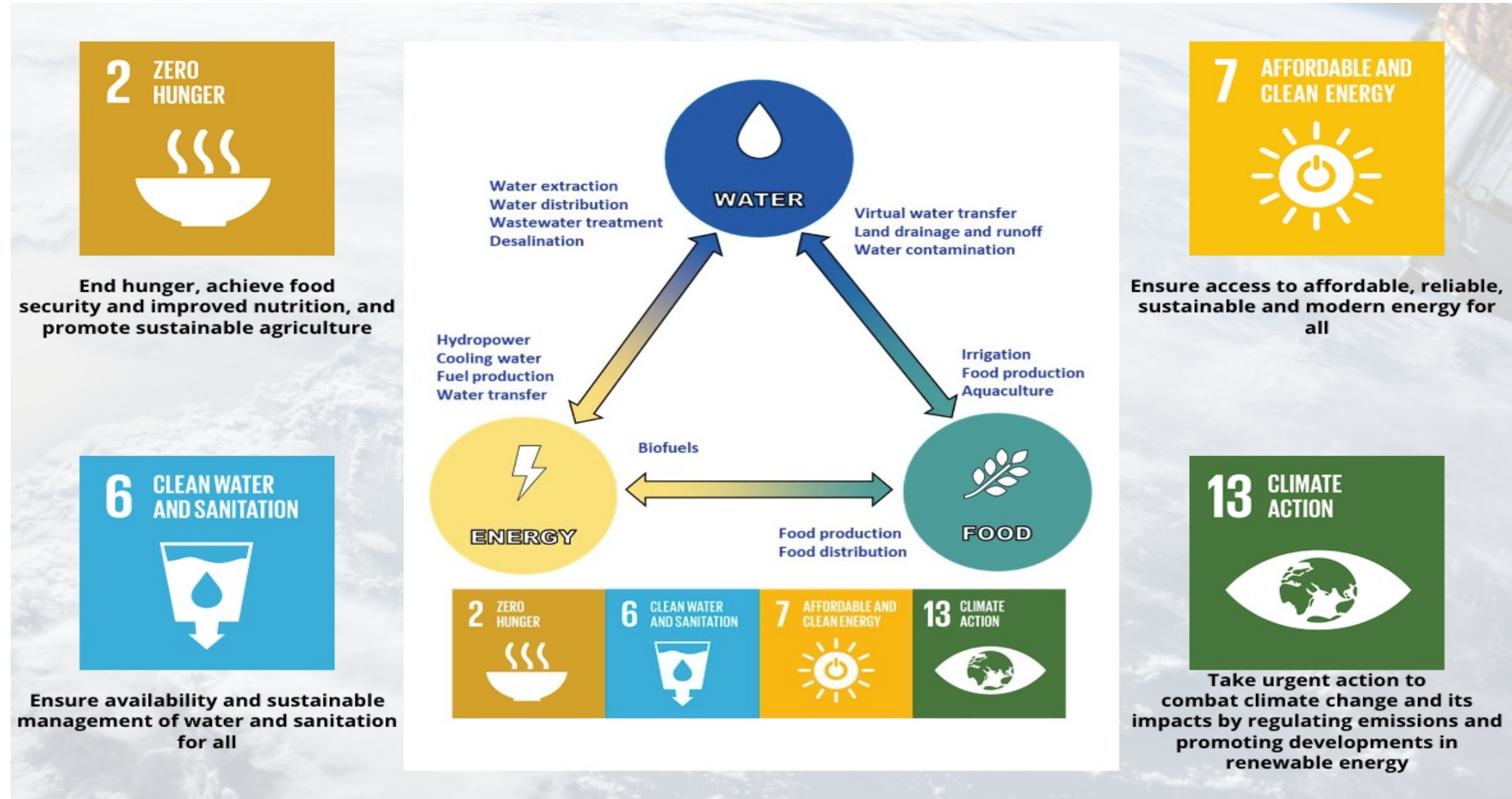
- Essential Water Variables (EWVs) are required to describe the water storage and transport/flux terms in the water cycle that supports food, water resources, and renewable energy systems
- Different end-users require observations of different space/time resolutions and latencies—from weather extremes to climate change
- EWV observations are required for the sustainable management of the water-energy-food-climate nexus

Essential Water Variables (EWVs)– Adapted/Updated from GEOGLOWS-WG3 following end-user feedback & review at international conferences:

<https://www.geoglows.org/pages/workinggroup3>). (Unninayar S. and R. Lawford, April 2022)

Primary EWVs	Supplemental EWVs
Precipitation	Surface meteorology
Evaporation	Surface and atmospheric radiation
Evapotranspiration	Clouds & water vapor
Snow	Aerosols
Soil moisture	Land cover, vegetation
Soil temperature	Permafrost
Groundwater	
Runoff/streamflow/river discharge	Surface altimetry
Surface water extent	Bathymetry
Lake/Reservoir Levels & Aquifer volumetric change; terrestrial water storage	Elevation/topography
Mass balances of glaciers and Ice sheets	Geological stratification
Water use/demand (agriculture, hydrology, energy, urban, others...)	
Water quality (E.g., EO-based Chl-a, HAB, TSS, T, and in-situ-based D-O₂, Nitrates/Sulphates, Ph/Salinity, EC, Turbidity, Heavy Metals, E.coli)	Land use

Depiction of GEO Earth Observations for WEF showing interaction pathways between critical WEF resource management sectors. Source: GEO EO4WEF (2022): <https://eo4wef.org/>. EWVs support the monitoring needs of the WEF Nexus, UN-SDGs, and international Frameworks & Conventions



The WEF is part of UN Sustainable Development Goals (17)
(<https://www.un.org/sustainabledevelopment/>)

WEF Elements include:

SDG 6-WATER (Clean water and sanitation)--includes:

- Integrated water resources management
- **Water quality**
- **Water use efficiency**

SDG-7-ENERGY (Affordable and clean energy)—includes:

- **Renewable energy**
- **Energy intensity**
- **Energy consumption**

SDG 2-FOOD (End hunger)—includes:

- Food security, resilience
- Sustainable agriculture
- Improved nutrition



[Source/Credit: UN Dept. Global Communications:](https://www.un.org/sustainabledevelopment/news/communications-material)

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