

## Gulf TREE Definition Quick Sheet

<b>Tool Type</b>		Type of tool depends on the user's preferred end result as well as what resources the user has available.
	Decision-support	Climate tool type that helps develop "what-if" scenarios of future conditions based on climate change and management decisions.
	Model	Systematic depiction of current and/or future conditions for different processes. Model climate tool types include theoretical, numerical, and conceptual and can range from simple to complex.
	Visualization	Climate tool type that creates simulations or graphics of current and/or potential future conditions.
<b>Tool Outputs</b>		Certain tools produce reports, visuals, or Geographic Information Systems (GIS) files to assist its users in further work.
	Geographic Information Systems (GIS) Map Layers	Layers of spatial or geographic data that can be manipulated and analyzed using Geographic Information Systems (GIS).
	Map Visuals (JPG, PDF)	Static map images that can be saved or shared.
	Reports	Document containing information organized in a narrative, graphic, or tabular form.
	Data	Tool allows exportation of data (i.e., information used to analyze a situation).
<b>I need help with (Tool Function)</b>		Intended uses and operations provided by tool.
	Identifying Vulnerabilities	Identifying community assets (e.g., critical infrastructure) at risk to climate-related hazards.
	Viewing Past/Current Conditions	Visualizing or accessing data for historical and/or present-day conditions.
	Engaging/Communicating	Connecting with audiences about climate issues through simple, easy-to-understand communication platforms and features.
	Adaptation Planning	Preparing a natural or urban area for the effects of climate change with the intention of reducing risk or exposure.
	Facilitating Recovery/Rebuilding	Establishing planning processes for recovering and rebuilding after significant disasters in order to improve resiliency in the face of future climate stressors and hazards.
	Visualizing Climate Projections	Understanding the possible different futures projected by climate tools via simulations or graphics.
<b>Climate Change Impact Themes</b>		Large subject areas related to climate change.
	Sea Level Rise	Increase in water level caused in part by melting land-based ice and expanding water. Exacerbates existing coastal

		hazards such as flooding, erosion, inundation, and extreme events. Often abbreviated to SLR.
	Extreme Weather Events	Weather event that is notably different from the typical weather pattern (e.g., severe, unexpected, etc.). Examples include heat waves, heavy rains, droughts and floods, and extreme storms (e.g., hurricanes).
	Changes in Precipitation	Fluctuations (increases or decreases) in amount of precipitation. Changes experienced vary widely across the Gulf as well as regionally.
	Changes in Temperature	Fluctuations (increases or decreases) in temperature. Climate projections show increasing temperatures across the Gulf of Mexico as well as on average globally.
	Carbon Emissions	Release of carbon (i.e., carbon dioxide) gas into the atmosphere through direct (e.g., driving cars, shipping industry, airplanes, etc.) or indirect (e.g., food, textiles, etc.) means.
	Changes in Air Quality	Increases and decreases in pollutants (e.g., particulate matter, sulfates, volatile organic compounds, etc.) and/or changes in the health and safety of the atmosphere caused by a changing climate (i.e., increasing temperatures result in lower air quality).
<b>Implementation vs. Screening Level</b>		Planning that requires locally-collected or supplemented data for implementation, prioritization, or design of restoration, mitigation, conservation, or construction projects for the built or natural environment. Examples include highly detailed community or natural resource planning.
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	Screening Level	Screening level or high-level communication tool not appropriate for high resolution planning (e.g., Sea Level Rise Viewer).
	Either (N/A)	
<b>Time Scale Projections</b>		Period(s) of time in the future covered by tool projections.
	Short-term Projections	One decade or less.
	Mid-term Projections	Between one decade and one century (i.e., multidecadal).
	Long-term Projections	One century or longer.

	Projections Not Necessary	
<b>Data Requirements</b>		Option to use personal data or pre-set, more general data.
	No Data Needed	Tool requires no input of data.
	Data Input Optional	Tool has the option to use pre-set data or to input user's own data.
	Data Required	Tool requires the user to input their own data.
<b>Level of Effort</b>		Extent of user experience and/or training required to use tool. Note that these are general classifications.
	Low	User does not need any experience to use tool.
	Moderate	User needs some software and/or GIS skills to use tool.
	High	User needs to be proficient in computer, internet, data analysis, and GIS to use tool.
<b>Level of Expertise</b>		Extent of user experience and/or training required to use tool. Note that these are general classifications.
	Beginner	User does not need any experience to use tool.
	Intermediate	User needs some software and/or GIS skills to use tool.
	Expert	User needs to be proficient in computer, internet, data analysis, and GIS to use tool.
<b>CLIMATE CHANGE TOPICS</b>		
<b>Built Environment</b>		Basic structures and facilities (e.g., buildings, roads, and power supplies) needed for a community.
	Buildings and Structures	Structures built for permanent use (e.g., a dwelling) or that is built by putting parts together and that usually stands on its own (e.g., a house, tower, bridge, etc.).
	Utilities	Services (e.g., light, power, or water) provided by a public utility.
	Energy Infrastructure	Large-scale facilities allowing for the transport of energy (e.g., electricity, oil, and natural gas) from producer to consumer and for management and direction of energy flow.
	Wastewater	Water that is adversely affected in quality by human influence (e.g., agricultural runoff, surface runoff, and especially sewage).
	Stormwater	Rainwater (or melted snow) that becomes surface water or runs into streets or onto roofs or lawns rather than infiltrating the ground.
	Transportation	System (e.g., bus, roadways, subways, etc.) for moving passengers or goods from one place to another.

	Critical Facilities and Services	Man-made structures/improvements which, because of their function, size, service area, or uniqueness, are paramount to day-to-day function (e.g., hospitals, power plants, wastewater treatment facilities, emergency response, etc.)
	Carbon Emissions	Release of carbon (e.g., carbon dioxide or monoxide) gas into the atmosphere through direct (e.g., driving cars, shipping industry, airplanes, etc.) or indirect (e.g., food, textiles, etc.) means.
***	Drinking Water	Water that is safe to drink or to use for food preparation without risk of health problems. Also known as 'potable water'.
***	Green and Blue Infrastructure	Plant- and water-based natural systems as infrastructure for communities (i.e., protection against flooding or improving soil, air, and water quality) in order to benefit both nature and people.
***	Ordinances/Codes	Laws and regulations passed and enforced by a municipality in order to maintain safety and preserve community standards.
***	Community Rating System (CRS)	The National Flood Insurance Program's (NFIP) Community Rating System (CRS) is a voluntary incentive program that encourages community floodplain management activities that go above and beyond standards required by the NFIP.
Planning and Land Use		Process of designing potential futures for a community, city, etc. Land use is a type of planning that is implemented through zoning, which can change management of land and lead to impactful changes.
	Community Planning	Public participatory process where future goals and objectives for the community are identified, priorities for project funding and implementation are set, and current policies are evaluated/revise.
***	Conservation Planning	Specific to maintain natural values and assets in a specific landscape or seascape with competing uses, values, and other threats and opportunities.
	Land Use	Management of land, including the social and economic potential that the land use provides (e.g., grazing, timber, and conservation).
	Vulnerability	Potential for assets to be adversely affected by hazards. Encompasses exposure, sensitivity, potential impacts, and adaptive capacity.
***	Ordinances/Codes	Laws and regulations passed and enforced by a municipality in order to maintain safety and preserve community standards.

***	Community Rating System (CRS)	The National Flood Insurance Program's (NFIP) Community Rating System (CRS) is a voluntary incentive program that encourages community floodplain management activities that go above and beyond standards required by the NFIP.
***	Carbon Storage	Capture and storage of carbon dioxide before release to the atmosphere (also known as 'carbon sequestration') through natural and/or anthropogenic (i.e., human) processes in order to mitigate climate change.
***	Drinking Water	Water that is safe to drink or to use for food preparation without risk of health problems. Also known as 'potable water'.
***	Green and Blue Infrastructure	Plant- and water-based natural systems as infrastructure for communities (i.e., protection against flooding or improving soil, air, and water quality) in order to benefit both nature and people.
	Historic Preservation	Utilizing planning to protect historic sites and resources (e.g., monuments, buildings) from hazards related to climate change (e.g., acid rain, increased erosion, extreme weather).
Ecosystems		All the living things in a particular area as well as components of the physical, non-living environment with which they interact (e.g., air, soil, water, and sunlight).
	Invasive Species	Introduced, non-native organism (e.g., disease, parasite, plant, or animal) that rapidly expands its range, displacing other species, and causes harm to the environment, the economy, or to human health.
***	Conservation Planning	Specific to maintain natural values and assets in a specific landscape or seascape with competing uses, values, and other threats and opportunities.
	Restoration	Manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning previous function(s). Includes ecological, ecosystem, and habitat restoration.
	Forestry	Science and practice of planting, managing, and caring for forests.
	Wetland Change	When coastal wetlands, especially estuarine and marine wetlands, are naturally or unnaturally altered by high energy events such as erosion and inundation from sea level rise and storms.
	Habitat Management	Manipulating an ecosystem in order to suit a purpose, especially to balance environmental and human activities.
***	Carbon Storage	Capture and storage of carbon dioxide before release to the atmosphere (also known as 'carbon sequestration') through natural and/or anthropogenic (i.e., human) processes in order to mitigate climate change.
***	Ecosystem Services Valuation	Quantifying the benefits that humans receive from natural systems; often utilizes economic value.

Flooding		Water overflowing its confines and submerging areas that are typically dry; can result in negative impacts on natural and built environment and communities.
	Risk Communication	Process of informing people about potential hazards to their person, property, or community.
	Sea Level Rise	Increase in water level caused in part by melting land-based ice and expanding water. Exacerbates existing coastal hazards such as flooding, erosion, inundation, and extreme events. Often abbreviated to SLR.
	Storm Surge	Abnormal rise of water generated by a storm, over and above the predicted astronomical tide. In coastal areas, often the greatest threat to life and property from a hurricane or other coastal storm.
	Saltwater Inundation	Flooding of saltwater (i.e., ocean water) onto normally dry land, commonly expressed as the height of the water above ground level. Can be caused by high tide, sea level rise, storm surge, or other events.
	Nuisance Flooding	Shallow flooding that leads to public inconveniences like frequent road closures, overwhelmed storm drains, and compromised infrastructure.
Social Vulnerability		Identifying risks due to climate hazards that affect a community's social interactions, institutions, and/or values; closely related to a society's ability to practice risk management.
Health		Human physical, social, and mental wellbeing. Can be adversely affected by climate hazards (e.g., heat waves, droughts, etc.).
	Extreme Heat	Period of abnormally hot weather that causes acute health effects. Compare to a heat wave, which is extreme heat for a prolonged period of time.
	*** Extreme Weather Events	Weather event that is notably different from the typical weather pattern (e.g., severe, unexpected, etc.). Examples include heat waves, heavy rains, droughts and floods, and extreme storms (e.g., hurricanes).
	Air Quality	Measure of pollutants (or lack thereof) present in air; used to determine health and safety of atmosphere.
	Water Quality	Chemical, physical, and biological condition of water, with respect to a particular purpose (e.g. drinking or swimming).
	Disease	Condition of the living animal or plant body or of one of its parts that impairs normal functioning and is typically manifested by distinguishing signs and symptoms.
Coastal Processes		Physical, biological, and geological processes and affecting coastlines and coastal habitats.
	Erosion	Process wherein sediments are broken down and worn away by waves, currents, wind, and/or precipitation.

	Subsidence	Sinking of the ground due to underground movement or soil compaction and/or degradation; most often caused by the removal of water, oil, natural gas, or mineral resources from the ground by draining, pumping, fracking, or mining activities.
	Sediment	Fragmented organic and inorganic material, typically occurring due to erosion or weathering, that is easily transported by water, wind, or ice.
Species Vulnerability		Degree to which organisms (e.g., disease, parasite, plant, or animal) are susceptible to and unable to cope with adverse impacts of climate change.
Agriculture		Practice of farming, including the cultivation of the soil for growing crops and the breeding and rearing of animals to provide food, cotton, and other products.
Economics		Science dealing with the material welfare of humankind or the production, distribution, and consumption of goods and services.
	General Economics	Encompasses overarching economic concepts and themes apart from ecosystem services
***	Ecosystem Services Valuation	Quantifying the benefits that humans receive from natural systems; often utilizes economic value.
Weather and Climate		Weather is day-to-day changes in atmospheric conditions. Climate, in contrast, is weather conditions prevailing in general or over a long period.
	Heat	High temperature resulting from high atomic energy.
	Precipitation	Any form of water particles that falls from the clouds and reaches the ground (e.g., rain, snow, sleet, and hail).
***	Extreme Weather Events	Weather event that is notably different from the typical weather pattern (e.g., severe, unexpected, etc.). Examples include heat waves, heavy rains, droughts and floods, and extreme storms (e.g., hurricanes).
	Drought	Period of abnormally dry weather marked by little or no rain that lasts long enough to cause water shortage for people and natural systems.
<b>ADDITIONAL GLOSSARY TERMS</b>		
Emissions Scenarios		Modeled future changes in releases of greenhouse gases into the atmosphere.
Climate Scenarios		Projected characteristics of potential future climate(s) (e.g, hotter, wetter).
Global Sea Level Rise		Average increase in sea level caused primarily by land-ice melt and water expansion.

Relative Sea Level Rise	Rate of sea level rise at any given point. Affected by local processes that can reduce or exacerbate global sea level rise (e.g., subsidence [ground sinking], tectonic plate movement, etc.). In the Northern Gulf of Mexico, for example, the relative sea level rise can be over 10 mm/year (nearly 0.5 inch/year) higher than global sea level rise trends.
Weather	Day-to-day changes in atmospheric conditions.
Climate	Weather conditions prevailing in general or over a long period.
NOAA	The National Oceanic and Atmospheric Administration.
EPA	The Environmental Protection Agency.
USDA	The U.S. Department of Agriculture.
NERR	The National Estuarine Research Reserve.
USGS	The United States Geological Survey.
U.S. DOT	The United States Department of Transportation.
Zero-dimensional	Mathematical term referring to a spatial theory where something with zero-dimensionality acts essentially as if in a vacuum. All data values are contained in a single point, which is infinitely small and stretches in no direction (and thus has no dimension).

<b>FEATURES</b>	<b>AUDIENCES</b>
Free Trial	Agriculture
Glossary	Community Officials
Mobile App	Conservationists
Multilingual	Decision-Makers
Multiple Tools	Environmental Agencies
Off-Line Use	Extension & Outreach Professionals
Open-Source	Federal Agencies
Tabletop Interface	Natural Resource Professionals
Training Offered	Non-Governmental Organizations
Tutorial	Planners
User Guide	Public
	Researchers
	Restoration Specialists
	State Agencies