**SOLUTION**

We will develop a web based tool to generate 3D/4D visualization of weather model using HTML, CSS, and JavaScript. We will use some external libraries and API which are listed below.

**WebGL** :- It is a JavaScript Api which is used to render high quality graphics in a web page. WebGL is going to provide the 3D visualization of earth.

**ArcGIS** :- It is a cloud based platform which contains geographical information. It is going to provide all the geographical information of globe. It will help us to locate and point out different locations on earth.

**Aeris.js** :- It is a JavaScript API for weather data. It is going to provide us all the required information which will help us to build a heat map.

The Numerical weather models are used for generating forecast which contains 4D information (Latitude, Longitude, height/pressure and time). It will go in three easy steps :-

1) With the help of WebGL 3D globe will be generated which will allow us to visualize/render earth in a 3D way

2). Arcgis will help in layering of earth by using maps and more geographical information and

3) We will fetch aeris.js API to get weather data in the form of colours.

**Key Feature Of Our Model :-**

1. We can access the Latitude, Longitude and Height of any place by its name in a 3D animated way.
2. The Temperature will be represented using Heat Maps.
3. The wind directions will be represented in a 3D way using Windy .js.

**Innovation**:-

1. Representation of wind pressure by windy.js on 3d globe.
2. Animated visualization of 3D/4D globe on searching cities.

**Advantages Of 3D Weather Model**

Not only does 3D modeling help the users to visualize 3D earth, but also improves forecasting efficiency and accuracy. 3D weather model allows the users to see what they would not see when designing in 2D.

3D forecast Model provide forecast details in a more presentable way as compare with 2D models.

**How It Can Help People**

1. Farmers can known when to plant or harvest their crops.
2. People can choose where and when to take their holidays to take advantages of good weather
3. Surfers known when large waves are expected
4. Regions can be evacuated if hurricanes or floods are expected
5. Aircraft and shipping rely heavily on accurate weather forecasting