User Manual: Water Forecasting Page

Overview

The Water Forecasting page provides a comprehensive analysis of water consumption, inflow, and usage distribution for a selected region. Users can explore data spanning current, past, and future periods to understand trends and make informed decisions. Additional features include land use analysis, monthly water consumption patterns, rainfall trends, and factors influencing water usage.

Navigation and User Actions

Dropdown Selections

To effectively use the Water Forecasting page, users must specify the following parameters:

1. **State:**
    - Choose a state from the dropdown menu to narrow the analysis to a specific geographical region.
    - This selection ensures that the data displayed corresponds to the water management needs and challenges of the chosen state.
2. **District:**
    - After selecting a state, users can further refine their analysis by selecting a district within that state.
    - This level of granularity allows for localized insights, catering to district-specific water consumption trends, inflow data, and land use patterns.
3. **Year:**
    - Select a year to explore historical data, analyze current metrics, or forecast future trends. The available range is from 2014 to 2030.
    - This selection dynamically updates the displayed graphs and charts, enabling users to assess water-related statistics for the chosen time period.

Additional Notes

- **Interactivity:** The dropdown selections are interlinked, ensuring that only relevant options appear in subsequent dropdowns based on prior choices.
- **Flexibility:** Users can change any of the parameters at any time, and the data visualizations will adjust accordingly to reflect the new inputs.

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1. Current Water Data

Description

This section provides an overview of the current water statistics for the selected region. Data points displayed include:

- **Water Consumption:** Total water consumption for the current year.
- **Inflow:** The current amount of water entering Districts.
- **Water Usage Distribution:** Proportional distribution of water used for:
    - Domestic purposes
    - Irrigation
    - Industrial activities

Notes:

- Current data represents the latest year for which records are available and does not vary with the selected year.

2. Past/Future Water Data

Description

This section compares past and projected water metrics. Users can view:

- **Water Consumption:** Total consumption for the selected year.
- **Inflow Trends:** Historical and future trends in water inflow.
- **Usage Distribution:** Proportional usage categorized into:
    - Domestic
    - Irrigation
    - Industrial

User Interaction

- Select a year to dynamically update the graphs and tables with the corresponding data.

3. Land Use Data

Description

A pie chart visualizes land use distribution for the selected district and year. Categories include:

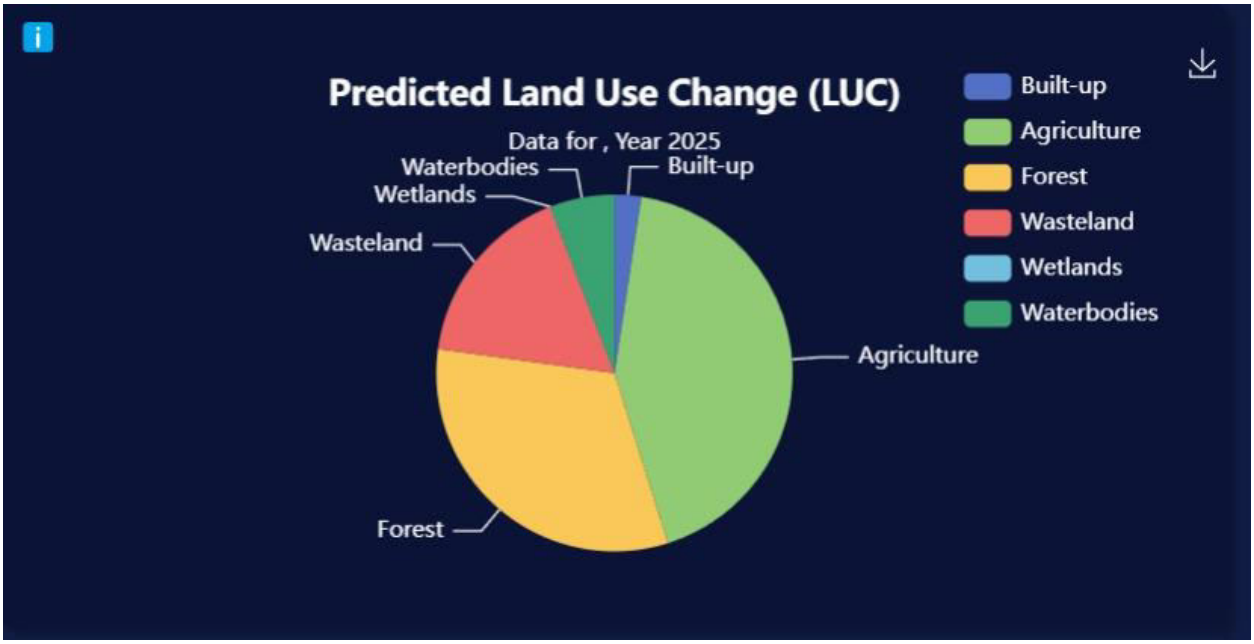
- Built-up areas
- Agricultural land
- Forest cover
- Wasteland
- Wetlands
- Waterbodies

User Interaction

- Select a year to display land use data for that period.
- Compare past and future land use to observe changes over time.

Insights

- Understand how land use impacts water availability and consumption trends.



4. Monthly Water Consumption

Description

A multi-line graph provides a detailed monthly breakdown of:

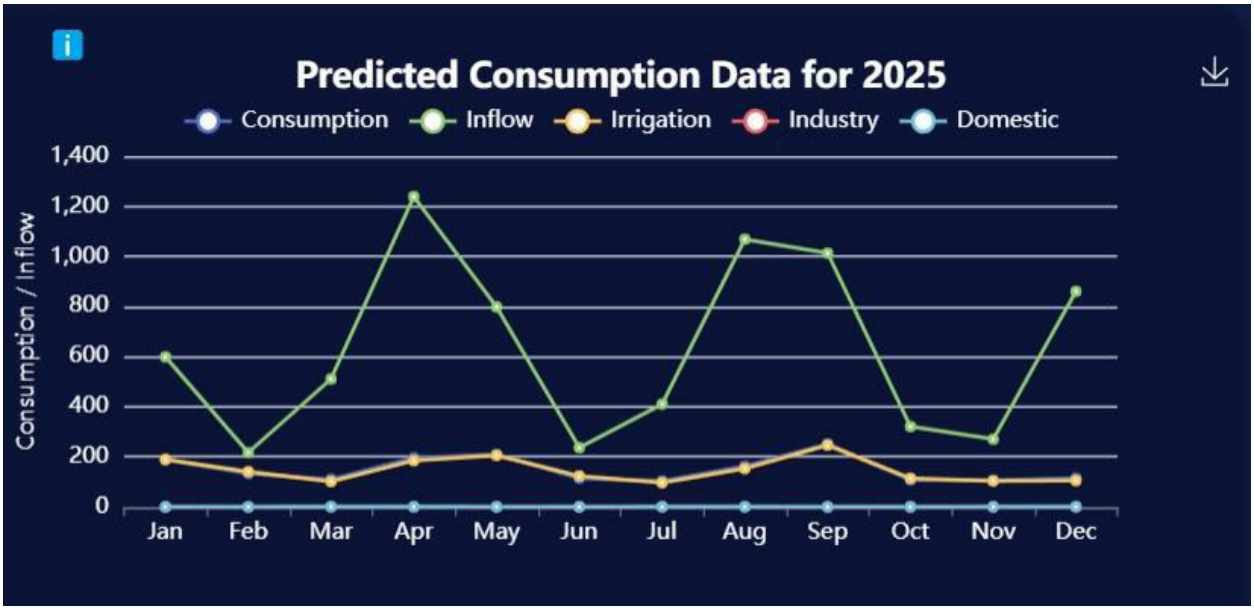
- **Consumption:** Total water usage per month.
- **Inflow:** Water entering reservoirs each month.
- **Usage Categories:** Separate lines for irrigation, industrial, and domestic consumption.

User Interaction

- Select a future year to project monthly trends and identify seasonal variations.
- The toggle button allows users to interactively turn individual data series on and off in the line graph.

Insights

- Analyze peak consumption periods and plan for seasonal demand.



5. Rainfall Data

Description

A line chart compares rainfall data for the selected region and year, showing:

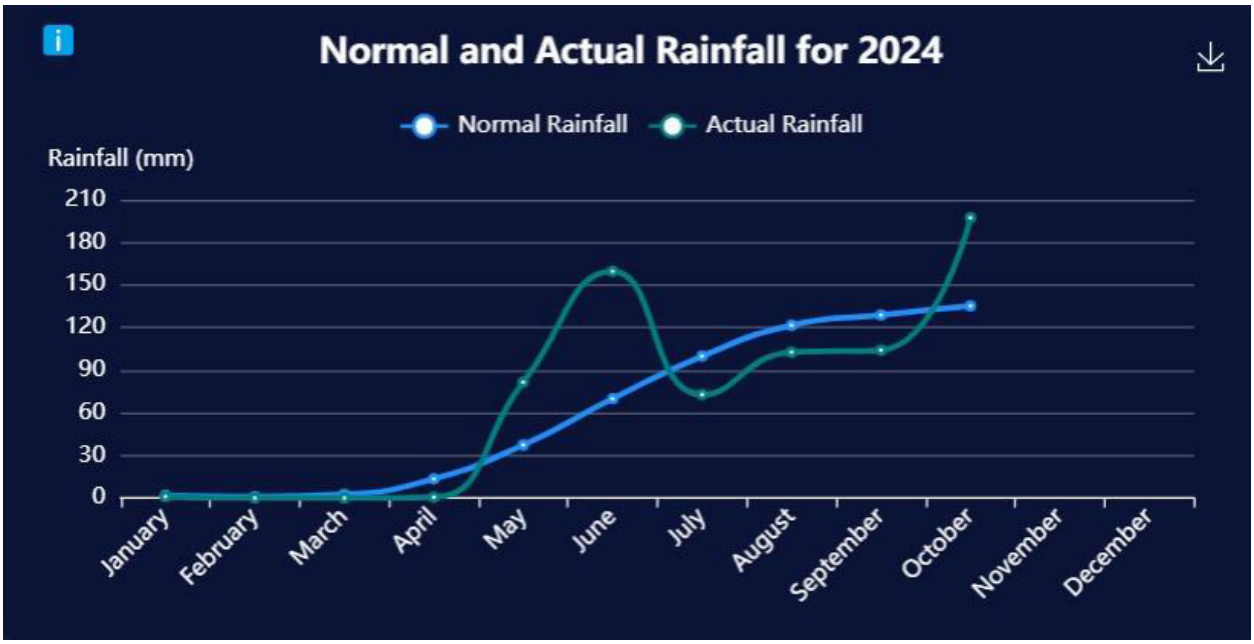
- **Normal Rainfall:** Historical averages.
- **Actual Rainfall:** Recorded figures for past years.
- **Expected Rainfall:** Predicted values for future years.

User Interaction

- Select a year to view rainfall patterns for that period.

Insights

- Identify deviations from normal patterns to assess potential impacts on water resources.



6. Factors Affecting Water Consumption

Description

A bar graph highlights the key factors influencing water consumption:

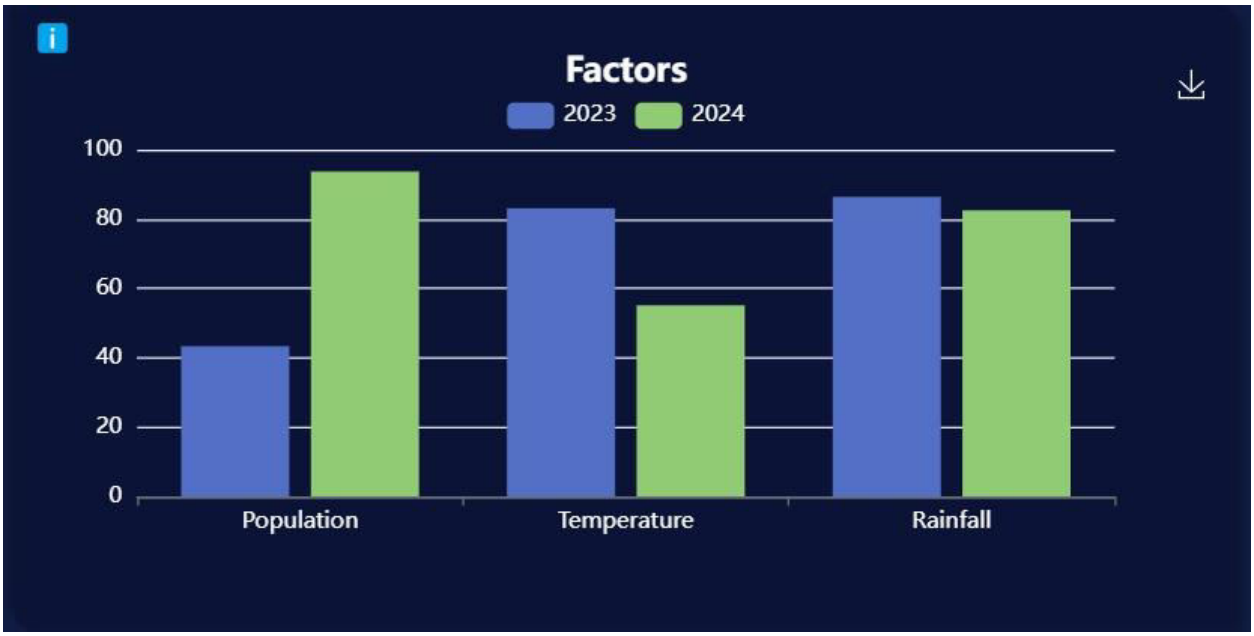
- **Population:** Growth trends affecting demand.
- **Temperature:** Impact of climate variations.
- **Rainfall:** Correlation with water availability.

User Interaction

- Select a future year to view projections of these factors.

Insights

- Assess how these factors contribute to water usage trends and plan mitigation strategies.



Additional Features

- **Interactive Graphs:** Hover over data points to view detailed statistics.
- **Dynamic Updates:** All charts and graphs update automatically based on selected parameters.

Tips for Effective Use

1. **Start with the Dropdown:** Ensure the correct state, district, and year are selected.
2. **Explore Trends:** Use interactive graphs to identify patterns and anomalies.
3. **Use for Planning:** Leverage insights to guide water resource management and policy decisions.

Troubleshooting

- **Data not loading:** Ensure all dropdown selections are valid and internet connectivity is stable.
- **Graphs not displaying:** Refresh the page or try a different browser.

This page equips policymakers and stakeholders with the data-driven insights required for sustainable water management and future planning.

Reservoir Status Page

Overview

The Reservoir Status page provides detailed insights into the current and future status of reservoirs within a selected region. By analyzing various parameters, this page helps users understand reservoir capacity, health, and trends over time, enabling proactive decision-making for water resource management.

Navigation and User Actions

Dropdown Selections

To access specific reservoir data, users must specify the following parameters:

1. **State:**
    - Choose the state to analyze from the dropdown menu.This selection narrows the data to reservoirs within the selected state.
2. **District:**
    - Select a district within the chosen state to focus on reservoirs located in that area. The district dropdown updates dynamically based on the state selection, showing only districts that exist within the chosen state.
3. **Year:**
    - Select a year to explore historical, current, or future data (2014 to 2029).
4. **Reservoir:**
    - Choose a specific reservoir within the selected district to display relevant data. Only reservoirs from the chosen district will be available for selection, ensuring the data is context-specific.

User Tips for Dropdown Selection

- **Sequential Selection:** Ensure that the dropdowns are selected in the order of state, district, year, and reservoir to access the correct data.
- **Filtering Data:** The choices made in the dropdowns filter the displayed data and visuals to match the selected parameters, providing a tailored analysis experience.
- **Dynamic Updates:** The dropdown menus are interconnected and will adjust their options based on prior selections, ensuring users only see relevant choices at each step.

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1. Reservoir Metrics

Description

This section provides eight key metrics about the selected reservoir for the chosen year:

- **Capacity:** Total gross capacity of the reservoir.
- **Storage:** Current and predicted water storage levels.
- **Level:** Usable water levels in the reservoir.
- **Flood Cushion:** Amount of storage reserved for flood control.
- **Inflow:** Water entering the reservoir.
- **Outflow:** Water discharged from the reservoir.
- **Age:** The age of the reservoir infrastructure.
- **Siltation:** Amount of silt accumulated over time.

User Interaction

- Select a reservoir and year to display corresponding data in dynamic data boxes.
- Compare past and future metrics to assess trends and potential risks.

Insights

- Evaluate the reservoir's capacity to meet demand.
- Identify trends in inflow and outflow to predict potential shortages or surpluses.

2. Reservoir Score

Description

A gauge chart displays the overall health and efficiency of the selected reservoir for the chosen year, based on various metrics. The score ranges from 0 to 100 and is categorized as:

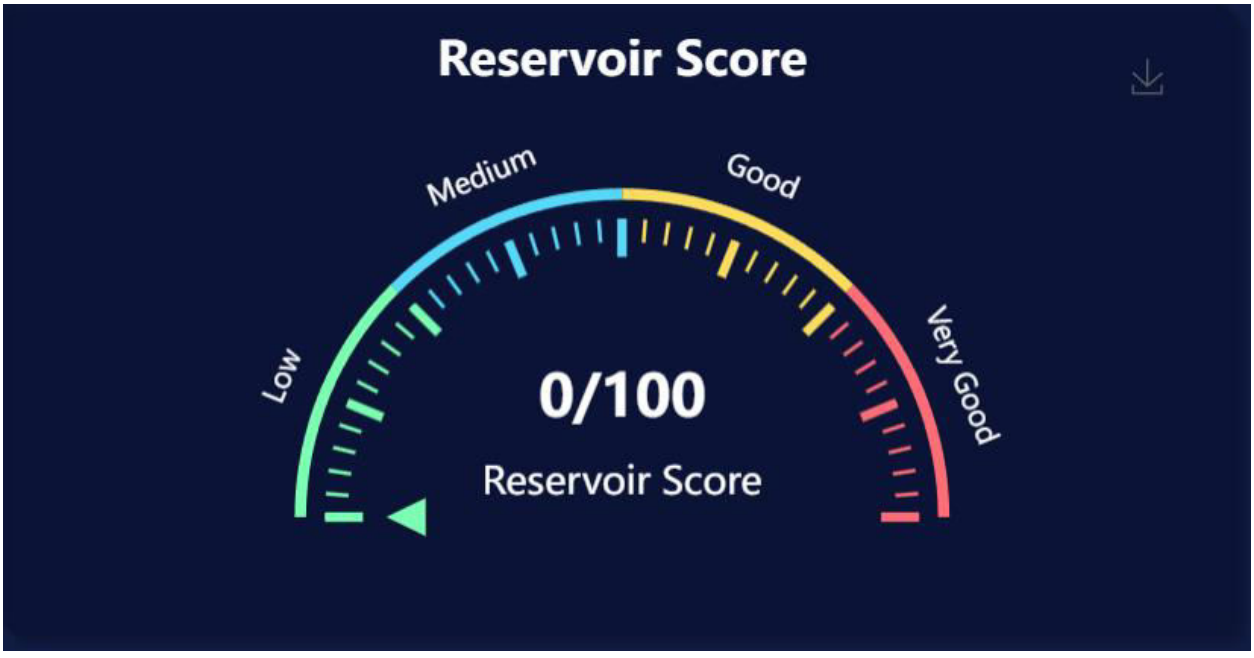
- **Very Good**
- **Good**
- **Medium**
- **Low**

Notes

- The score is only available for future years.
- The score is calculated based on factors such as age of reservoir, capacity, storage , siltation, and flood cushion.

Insights

- Understand the reservoir's readiness to handle future demand and extreme weather events.
- Identify areas needing improvement to maintain reservoir.



3. Reservoir Data Over Time

Description

A multi-line chart illustrates the changes in reservoir metrics over time, showing:

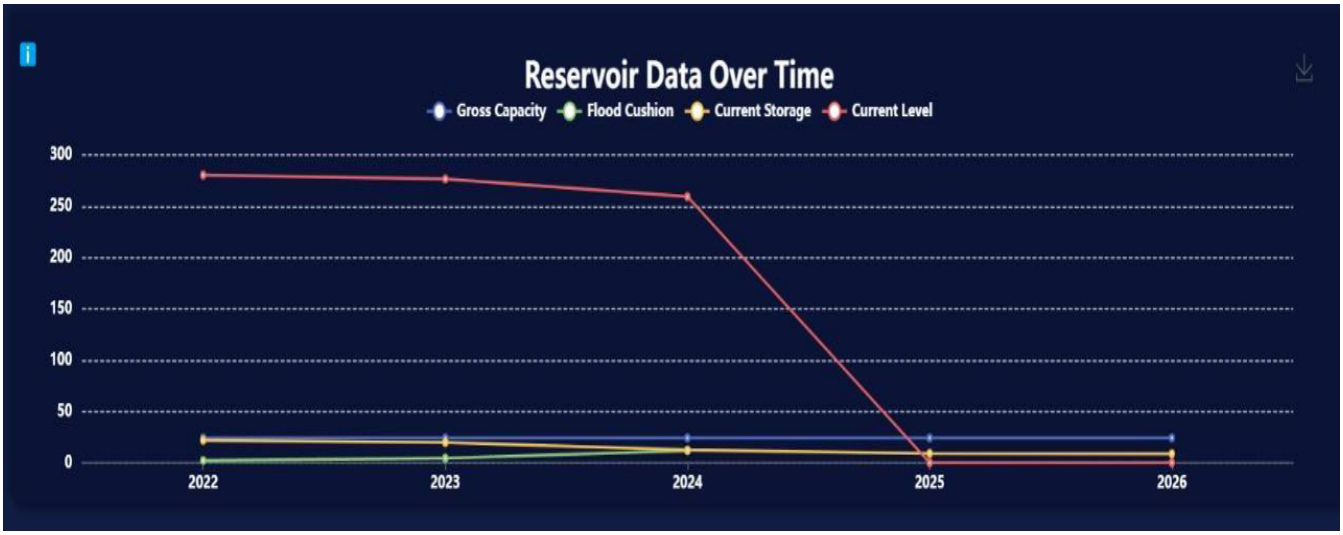
- **Capacity:** Trends in reservoir capacity.
- **Flood Cushion:** Variations in flood storage levels.
- **Storage:** Historical and projected storage levels.
- **Level:** Usable water levels over time.

User Interaction

- Select a reservoir and year to update the chart dynamically.
- Compare historical data with future projections to analyze trends.

Insights

- Identify long-term trends in reservoir performance.
- Plan for future storage requirements and flood management.



Additional Features

- **Dynamic Updates:** All charts and metrics update automatically based on dropdown selections.
- **Interactive Visuals:** Hover over chart elements to view detailed statistics.

Tips for Effective Use

1. **Select Specific Parameters:** Ensure accurate dropdown selections to view relevant data.
2. **Compare Trends:** Use the multi-line chart to analyze how reservoir metrics evolve over time.
3. **Focus on Score:** Use the score to prioritize maintenance and risk mitigation.

Troubleshooting

- **Missing Data:** Ensure all dropdown selections are valid and the reservoir has sufficient historical or projected data.
- **Charts Not Loading:** Refresh the page or try a different browser for optimal performance.

Scenario Planning Page

Overview

The Scenario Planning page allows users to simulate potential future scenarios by adjusting key variables affecting water flow and storage. This page supports proactive water resource management by enabling users to explore the implications of changes in rainfall, evaporation, inflow, and outflow on drought and flood risks. By simulating these scenarios, users can assess the state's readiness and make informed decisions about future water resource strategies.

Navigation and User Actions

Dropdown Selections

To begin scenario planning, users must specify the following parameters:

1. **State:**
    - Select the state from the dropdown list. This choice ensures that the analysis is focused on the selected state's relevant data.
2. **District:**
    - Choose a district within the selected state. This narrows the scenario planning to specific regions and allows for targeted analysis.
3. **Month:**
    - The page is designed to show data for the next month, starting from the current month. This ensures the scenario analysis remains relevant and timely, providing insights into immediate future conditions.

User Actions

- **Slider Adjustments:**
    - Users can adjust four key variables using sliders:
        - **Rainfall** (Range: 0 to average + 100)
        - **Evaporation** (Range: 0 to average + 100)
        - **Inflow** (Range: 0 to average + 100)
        - **Outflow** (Range: 0 to average + 100)
    - The average values shown are based on the predicted model. Users can modify these values to simulate different scenarios.
- **Apply Button:**
    - After adjusting the sliders, users click the "Apply" button to apply their selected values and update the data displayed on the page.

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1. Variable Adjustment (Sliders)

Description

The sliders allow users to modify the following variables:

- **Rainfall:** Simulates changes in precipitation, which can impact inflow and storage levels.
- **Evaporation:** Helps assess how varying evaporation rates affect water availability.
- **Inflow:** Analyzes the impact of adjusted water inflow on reservoir levels.
- **Outflow:** Examines the potential effects of changes in water outflow.

User Interaction

- Users can interact with the sliders to modify the key variables that influence water availability and flow. The sliders offer a range from 0 to the average value plus 100, allowing users to simulate a range of scenarios.
- The current default value of each slider represents the average prediction from the model. Users can adjust these sliders to reflect different levels of rainfall, evaporation, inflow, and outflow based on anticipated or hypothetical conditions.

Insights

- Adjusting these values enables users to understand the impact of varying weather and water flow conditions on future water availability.
- By simulating different levels of rainfall or evaporation, users can identify potential risks related to water scarcity or excess water storage, supporting informed decision-making for water resource management.

2. Scenario Metrics

Description

This section provides five key metrics about the selected value for the chosen district:

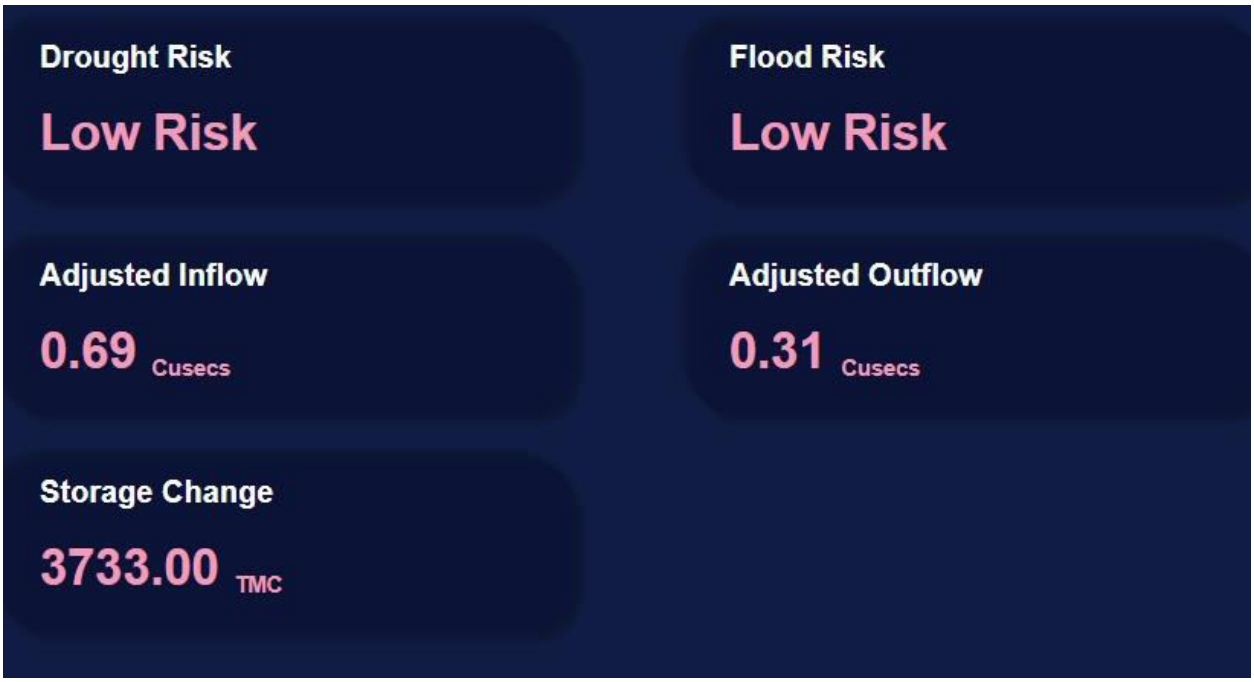
- **Drought Risk (Text):** Displays the potential risk of drought based on adjusted values.
- **Flood Risk (Text):** Shows the likelihood of flooding based on scenario adjustments.
- **Adjusted Inflow (Number):** Shows the numerical value of inflow after applying the changes.
- **Adjusted Outflow (Number):** Displays the new outflow figure post-adjustment.
- **Storage Change (Number):** Provides the change in storage levels resulting from the scenario.

User Interaction

- Select a value and district to display corresponding data in dynamic data boxes.
- Compare lower and higher values to assess trends and potential risks.

Insights

- Evaluate the district risk to meet following scenario.
- Identify trends in inflow and outflow to predict potential shortages or surpluses.



3. Flood Score (Gauge Chart)

Description

A gauge chart displays the overall Score of the selected scenario for the chosen district, based on various metrics. The score ranges from 0 to 100 and is categorized as:

- **Very High Risk**
- **High Risk**
- **Medium Risk**
- **Low risk**

User Interaction

- The flood score is represented by a gauge chart that visually indicates the risk level of flooding based on the scenario's adjustments. Users can view how the flood risk shifts as they modify the sliders for rainfall, inflow, and outflow.
- The chart updates dynamically when the "Apply" button is clicked, ensuring that users see real-time changes based on their selected parameters.
-

Insights

- The flood score helps users gauge the severity of potential flood risks, categorized into low, medium, high, and very high risk levels.
- By evaluating the flood score, users can identify whether the state or district is at a higher risk of flooding under the selected scenario.
- This information is vital for preparing mitigation strategies and allocating resources for flood prevention

4. Drought Score (Gauge Chart)

Description

A gauge chart displays the overall Score of the selected scenario for the chosen district, based on various metrics. The score ranges from 0 to 100 and is categorized as:

- **Very High Risk**
- **High Risk**
- **Medium Risk**
- **Low risk**

User Interaction

- The drought score is shown as a gauge chart, similar to the flood score. It updates according to the changes made to the rainfall and evaporation sliders.
- Users can see the impact of their scenario adjustments on the drought risk level, which is displayed in real-time.

Insights

- The drought score indicates the likelihood of drought, classified into low, medium, high, and very high risk categories.
- Users can use the drought score to assess the preparedness of the region to handle potential water shortages.
- By identifying the drought risk level, users can take proactive measures to enhance water conservation, increase storage capacities, or implement irrigation adjustments.

Additional Features

- **Dynamic Updates:** All charts and metrics update automatically based on dropdown selections.
- **Interactive Visuals:** Hover over chart elements to view detailed statistics.

User Tips for Scenario Planning

- **Applying Changes:** Ensure the sliders are adjusted carefully before clicking “Apply” to see the most accurate scenario outcomes.
- **Interpreting Results:** Review the data cards, gauge charts, and risk scores to understand how the adjustments impact overall water management strategies.
- **Scenario Comparison:** Users can create multiple scenarios to compare different outcomes and assess preparedness for potential extreme weather conditions.

Troubleshooting

- **Missing Data:** Ensure all dropdown selections are valid and the reservoir has sufficient historical or projected data.
- **Charts Not Loading:** Refresh the page or try a different browser for optimal performance.

User Manual: Risk Assessment Page

Overview

The Risk Assessment page is a comprehensive tool designed to help users evaluate the potential risks associated with reservoirs within a specified region. This page equips decision-makers with detailed insights to identify and manage water resource vulnerabilities effectively. By analyzing risk levels, contributing factors, and potential mitigation strategies, users can better prepare for various risk scenarios, from flood events to infrastructure failures.

The page features a dynamic risk score that quantifies the overall risk level of the selected reservoir, categorizing it into different risk levels. Additionally, a bar graph provides a visual breakdown of factors influencing the risk score, enabling users to understand the key elements that contribute to reservoir stability and readiness. This page serves as a valuable resource for proactive water resource management, supporting the development of targeted strategies for risk reduction and improved reservoir health.

Navigation and User Actions

Dropdown Selections

To view the risk assessment data, users need to select the following parameters:

1. **State**:
    - Choose the state for analysis from the dropdown menu. This narrows down the data to the selected region.
2. **District**:
    - Select the district within the chosen state to focus on relevant data.
3. **Year**:
    - Choose a year to view risk analysis for that time period (available only for future years).

User Actions

- To access the risk assessment data, select the desired state, district, and year from the dropdown menus.
- This customizes the view to display risk analysis specific to the chosen region and time period.
- Once selections are made, the page dynamically updates to show relevant risk metrics, scores, and contributing factors for thorough evaluation.

1. Risk Assessment Text Data

Description This section provides a comprehensive text summary that highlights the risk level of the selected reservoir for the chosen year. It includes:

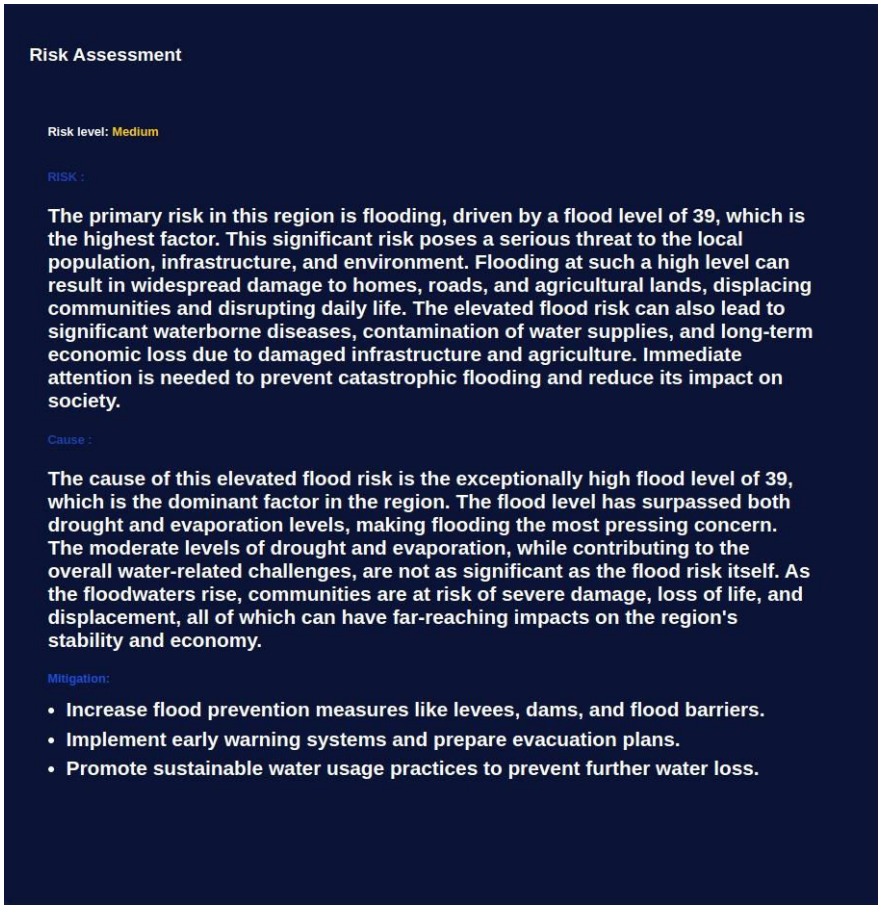
- **Risk Level**: Displays the overall risk level ranging from low to very high.
- **Cause of Risk**: Outlines the main factors contributing to the identified risk (e.g., inadequate storage, high siltation, extreme weather).
- **Mitigation Strategies**: Offers recommendations for mitigating identified risks (e.g., enhancing flood control measures, improving reservoir maintenance).

User Interaction

- Select a state, district, and year to display the corresponding risk analysis text data.

Insights

- Understand the severity and nature of risks affecting the reservoir.
- Gain insight into practical measures for risk reduction and improved reservoir management.
- Plan future interventions to lower risk levels and ensure water security.



2. Risk Score

Description The gauge chart visually represents the risk score of the selected reservoir for the chosen year, scored from 0 to 100. The chart labels are categorized as:

- Very High Risk
- High Risk
- Medium Risk
- Low Risk

User Interaction

- The chart updates dynamically based on the dropdown selections (state, district, and year).
- The score is calculated using a combination of factors including capacity, age, siltation, and past data trends.

Insights

- The risk score helps users quickly assess the reservoir's ability to withstand extreme conditions.
- Identify whether immediate actions are required based on the risk score.
- Prioritize areas that need urgent attention to prevent damage and ensure operational stability.

3. Factors Affecting Risk (Bar Graph)

Description This bar graph illustrates various factors that contribute to the risk score, displaying values on a scale from 0 to 100. Factors may include:

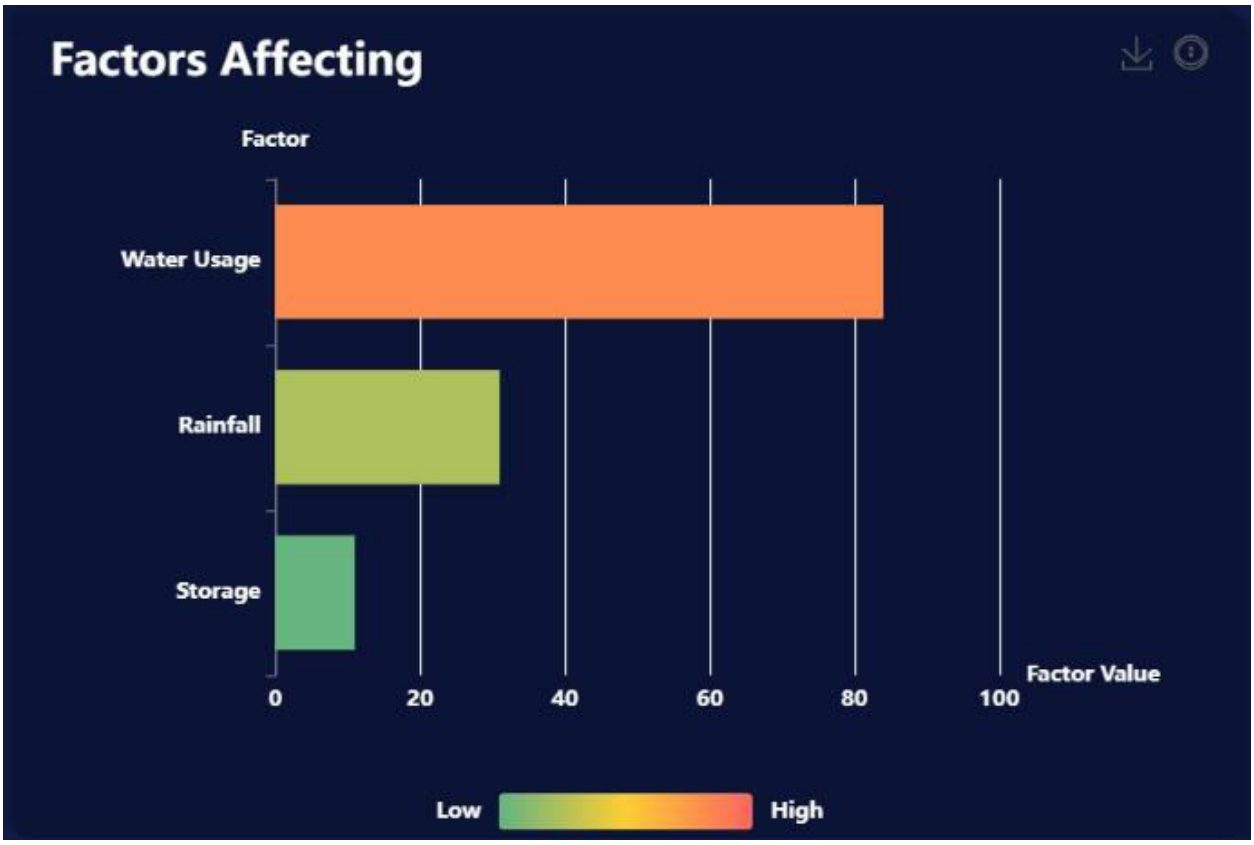
- **Age of the Reservoir**: Older reservoirs may be more prone to risks.
- **Siltation Levels**: High levels of silt can reduce the storage capacity.
- **Inflows and Outflows**: Imbalances in water input and output can indicate potential issues.
- **Weather Conditions**: Extreme weather patterns, such as heavy rainfall or drought, impact risk levels.

User Interaction

- The graph dynamically updates based on the selected state, district, and year.
- Hover over each bar to view detailed values and contributing data.

Insights

- Analyze which specific factors contribute most to the overall risk score.
- Use this information to plan targeted improvements in reservoir management.
- Monitor changes over time to assess the effectiveness of risk mitigation measures.



Additional Features

- **Dynamic Updates:** All charts and metrics update automatically based on dropdown selections.
- **Interactive Visuals:** Hover over chart elements to view detailed statistics.

Tips for Effective Use

- **Ensure Accurate Selections**: Verify that the dropdown options are correctly set to access relevant data.
- **Review the Risk Summary**: Pay close attention to the text summary for contextual understanding of the risk factors.
- **Compare Factors**: Use the bar graph to identify and compare how each factor influences the risk.

Troubleshooting

- **Missing Data**: Confirm that the selected reservoir and year have data available for analysis.
- **Chart Not Updating**: Refresh the page or ensure the browser is not blocking content that updates in real-time.

This section should help users navigate, understand, and leverage the Risk Assessment page to make informed decisions related to water resource management.

User Manual: Reports Page

Overview

The Reports page consolidates all visual analytics and data insights into a single location, enabling users to review and download comprehensive reports. Users can view all graphs used in prior sections for a selected region and year, and generate a PDF document for sharing or documentation purposes.

Navigation and User Actions

Dropdown Selections

To access specific reports, users must configure the following parameters:

1. **State**
    - Choose the state for analysis from the dropdown menu.
2. **District**
    - Select the district within the chosen state.
3. **Year**
    - Choose the year for which the data is to be reviewed (historical, current, or projected).
4. **Reservoir**
    - Select a specific reservoir in the chosen district.

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1. All Graphs

Description:
This section compiles all visualizations, including charts, graphs, and metrics from previous pages, into one comprehensive dashboard for the selected parameters.

- **Graphs Included:**
  - Water Forecasting Metrics: Monthly consumption, LUC , Factors affecting consumption.
  - Reservoir Status: Multi-line graphs on capacity, flood cushion, and live levels.
  - Scenario Planning: Scenario Score
  - Risk Assessment: Risk score

User Interaction:

- Use dropdown filters to select the state, district, year, and reservoir.
- Scroll through all graphs in an organized layout for easy review.

Insights:

- Gain a holistic view of water resource trends and reservoir health for the selected region.
- Use consolidated visuals to identify key challenges or areas for improvement.

2. Download PDF

Description:
This section allows users to generate and download a PDF report containing all selected graphs and metrics.

User Interaction:

- Click the **Download PDF** button after configuring dropdown filters.
- Customize the content of the report
- Save the generated PDF file locally or share it directly.

Insights:

- Share a professional and comprehensive report with stakeholders.
- Use the PDF for presentations, audits, or strategic planning purposes.

Additional Notes

- **Customization:** Users can select specific graphs to include in the PDF for a tailored report.
- **Interactive Features:** Ensure dropdown filters are set accurately to reflect desired data in the report.
- **Troubleshooting:** If graphs do not load or the PDF does not generate correctly, refresh the page or check dropdown settings.

Tips for Effective Use

1. **Verify Selections**: Always double-check dropdown parameters (state, district, year, reservoir) to ensure the correct data and graphs are displayed.
2. **Utilize Graph Insights**: Use the interactive features of the graphs, such as tooltips, to explore detailed data trends and patterns.
3. **Regular Report Generation**: Download PDF reports periodically to maintain records and monitor changes effectively over time.

Troubleshooting

1. **Graphs Not Displaying**: Refresh the page and reselect the parameters. Ensure your internet connection is stable.
2. **PDF Download Fails**: Check for sufficient storage space and enable pop-ups in your browser. Retry generating the report if needed.
3. **Incorrect Data in Graphs**: Confirm that the selected state, district, year, and reservoir match the intended dataset and parameters.

User Manual: Map Page

Overview

The Map Page provides a visual representation of reservoirs across India, with an emphasis on a selected state. This feature allows users to view the geographical distribution of reservoirs, select a specific reservoir, and access detailed, updated information about it. This page supports effective water resource planning by offering a clear, interactive map that aids in understanding reservoir locations and their current data.

Navigation and User Actions

Dropdown Selection

1. **State**:
    - Users must select a state from the dropdown menu to display only the reservoirs located within that state. This selection filters the map to show relevant data and options for that region.

Additional Notes

- **Data Accuracy**: The data presented on the map and in the reservoir details section is sourced from official water management departments and regularly updated to maintain accuracy.
- **Interactive Map**: The map utilizes interactive elements that allow users to zoom in and out and click on markers for a more detailed view.
- **Accessibility**: Ensure the page is accessible by checking that screen readers are supported and that alt text is available for map icons and data points for users with visual impairments.
- **Compatibility**: The page is optimized for modern browsers. If you encounter performance issues, try updating your browser or accessing the page in a different one.
- **Data Privacy**: The data on the map and reservoir details are public and intended for water resource management purposes only.

1. **India Map**

Description:

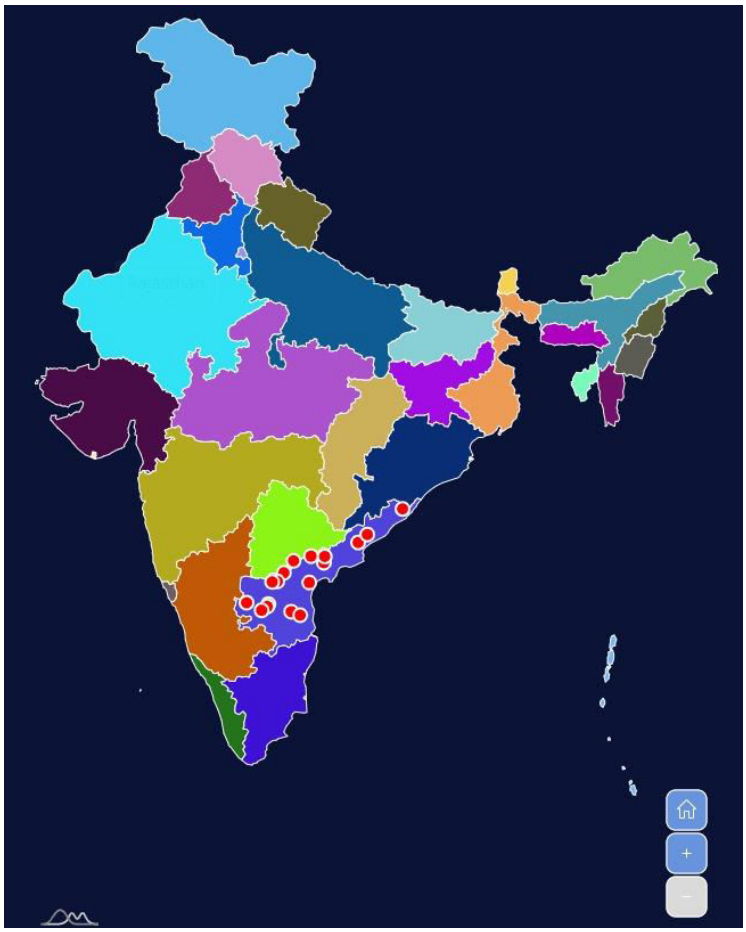
- The interactive map displays all reservoirs within the selected state, marked with identifiable pins for easy identification.

User Interaction:

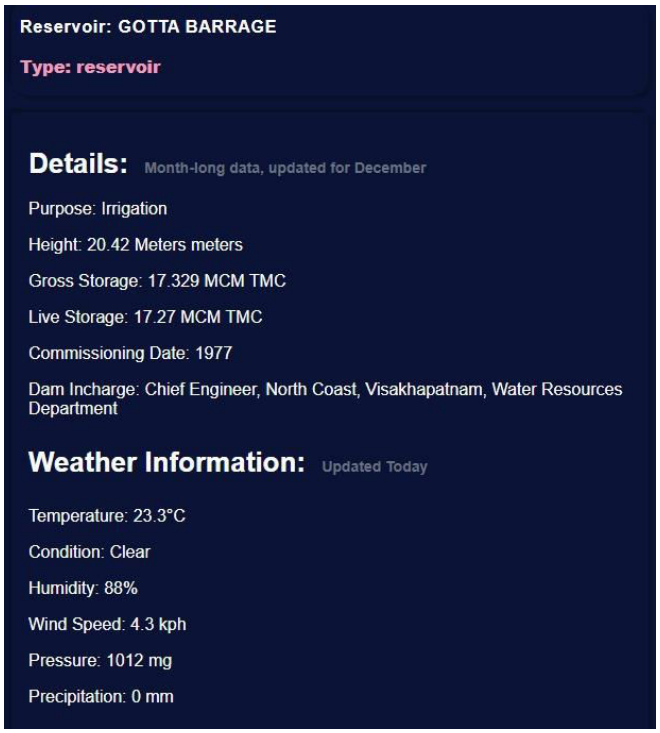
- Click on a reservoir pin to view specific data related to that reservoir.

Insights:

- Provides a geographical overview of reservoir locations, enabling quick identification of the reservoirs within the selected state for further analysis.



2. **Reservoir Data**
    - **Description**: Detailed data about the selected reservoir is displayed, providing comprehensive insights into its status and recent conditions. The data includes:
        - **Details**: Month-long reservoir data, which is updated every December.
        - **Purpose**: Purpose of the reservoir (e.g., irrigation).
        - **Height**: Current height of the reservoir (e.g., 20.42 meters).
        - **Gross Storage**: Total storage capacity (e.g., 17.329 MCM TMC).
        - **Live Storage**: Usable water storage level (e.g., 17.27 MCM TMC).
        - **Commissioning Date**: Date the reservoir was commissioned (e.g., 1977).
        - **Dam Incharge**: Responsible authority or position (e.g., Chief Engineer, North Coast, Visakhapatnam, Water Resources Department).
        - **Weather Information**: Real-time weather data, updated daily.
            - **Temperature**: Current temperature (e.g., 23.3°C).
            - **Condition**: Weather condition (e.g., Clear).
            - **Humidity**: Current humidity percentage (e.g., 88%).
            - **Wind Speed**: Wind speed in kph (e.g., 4.3 kph).
            - **Pressure**: Atmospheric pressure in mg (e.g., 1012 mg).
            - **Precipitation**: Rainfall measurement (e.g., 0 mm).
    - **User Interaction**: After selecting a reservoir on the map, the user can view its detailed data, which is refreshed monthly for storage details and daily for weather information.
    - **Insights**: Offers comprehensive and up-to-date information for strategic decision-making regarding reservoir management and water usage.



Tips for Effective Use

- **Select a State First**: Ensure that the state is selected to filter the map and display relevant reservoirs.
- **Click for Details**: Click on the reservoir pins for detailed data and to monitor current conditions.
- **Review Updates Regularly**: Monthly updates for reservoir storage and daily updates for weather conditions ensure data remains current for effective decision-making.

Troubleshooting

- **Map Not Displaying**: Ensure the browser settings allow for interactive maps and JavaScript is enabled.
- **Data Not Updating**: Refresh the page or check internet connectivity for real-time data updates.
- **Missing Data**: Verify that the selected state has reservoirs and that the data for the selected month is available.

User Manual: Imports/Exports Page

Overview

The Imports/Exports page is designed to streamline the process of uploading and downloading data for reservoir analysis. Users can input monthly data to assist with model training and retrieve data for analysis via CSV files or API endpoints. This page supports precise data management, aiding in decision-making and improving water resource forecasting.

Navigation and User Actions

Dropdown Selections

To import or export data, users must first select the following parameters:

1. **State**
   - Choose the state for analysis from the dropdown menu.
   - This selection filters data to the reservoirs located within the chosen state.
2. **District**
   - Select the district within the chosen state to narrow down data to the relevant area.
3. **Year**
   - Choose the year to input or export monthly data.
4. **Reservoir**
   - Select the reservoir within the chosen district to specify the data focus.
   - Only reservoirs corresponding to the selected district are available.
5. **Month** (if applicable)
   - For monthly data management, select the specific month for which data is being imported or exported.

User Actions

1. **Uploading Data for Model Training**
   - Navigate to the **Import Data** section.
   - Select the **State**, **District**, **Year**, **Reservoir**, and **Month** using the dropdown menus.
   - Click the **Upload Button** to upload a CSV file containing reservoir data. Ensure the file adheres to the predefined column structure (e.g., `State, District, Reservoir Name, Month, Year, Capacity, Storage, Inflow`).
2. **Downloading Reservoir Data**
   - Navigate to the **Export Data** section.
   - Select the **State**, **District**, **Year**, and **Reservoir** from the dropdown menus.
   - Choose the format for export:
     - **Download CSV:** Click the download button to save the data as a spreadsheet.
     - **Generate API Key:** Click to get an API key and link for programmatic access.
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1. Import Data Section

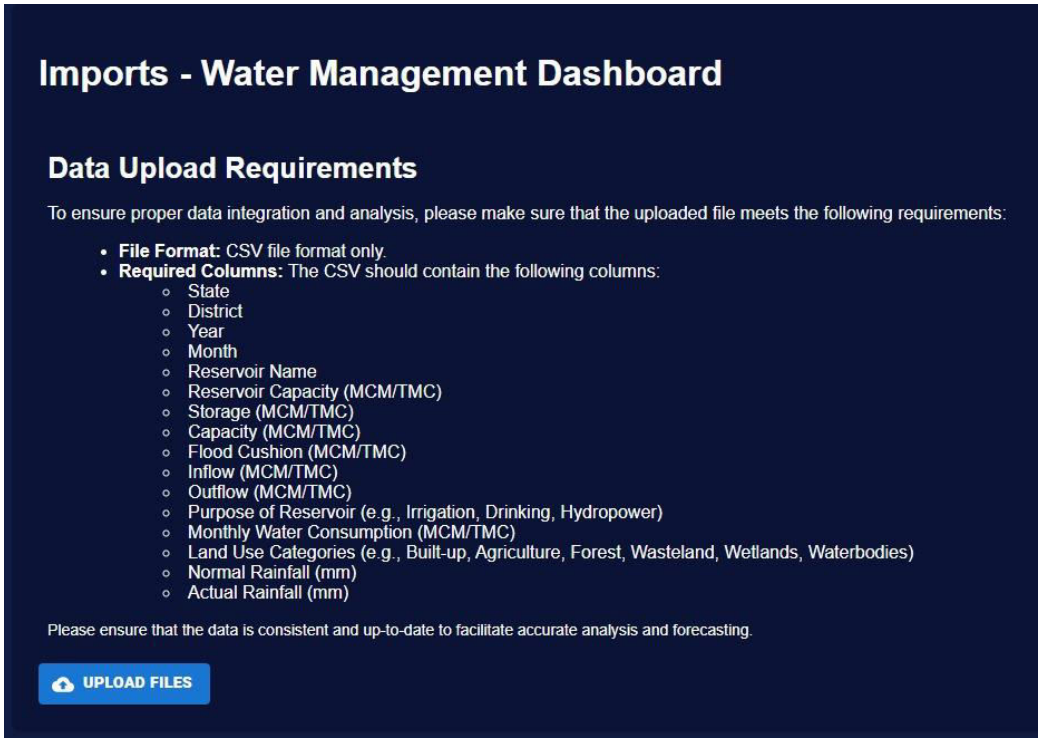
Description
This section allows users to upload reservoir data for model training. It ensures data compatibility with predefined column names and data formats. Monthly data uploads are preferred for accurate forecasting.

User Interaction

- Use the dropdowns to select state, district, year, reservoir, and month.
- Upload data using the **Upload Button** provided.
- Ensure the uploaded file matches the required column structure:
    - **Required Columns:**
        - State, District, Reservoir Name, Month, Year, Capacity, Storage, Inflow, Outflow, Rainfall, Evaporation, Siltation, etc.
- Validate the file format (CSV preferred).

Insights

- Uploaded data is processed and used to train predictive models.
- Improves the accuracy of future water demand and reservoir health assessments.



2. Export Data Section

Description
This section provides users with the ability to download reservoir data in CSV format or retrieve data programmatically via an API endpoint.

User Interaction

- Use the dropdowns to select state, district, year, reservoir, and month.
- Choose one of the following actions:
    - **Download CSV:** Retrieve data in a spreadsheet-friendly format for offline analysis.
    - **Generate API Key:** Access data programmatically using a secure API endpoint.
- Filter the exported data to focus on specific months or reservoirs for tailored results.

Insights

- Enables users to perform their own analysis or integrate the data into external systems.
- Facilitates data sharing for collaborative research and decision-making.

Additional Notes

1. Ensure that imported files are formatted according to the predefined structure to prevent processing errors.
2. Only authorized users will have access to the API endpoint for data exports.
3. Data is updated monthly, with the export feature providing the latest available insights.

Tips for Effective Use

- **Frequent Updates:** Regularly upload monthly data to maintain up-to-date training models.
- **Data Validation:** Double-check the accuracy and format of data before importing.
- **Collaborative Sharing:** Utilize the export feature to share insights with other stakeholders.

Troubleshooting

- **File Upload Issues:** Ensure the file format is CSV and matches the required column structure.
- **Missing Data in Exports:** Confirm that the selected parameters align with the available data.
- **API Access Issues:** Verify that the correct API key is being used for programmatic access.