SkyAware UI/UX Design & Component Breakdown

I. Overall Design Philosophy

- **Aesthetic:** Clean, professional, and trustworthy (NASA-inspired). Use of dark mode (optional, but good for hackathon) or a light, high-contrast palette.
- **Color Palette:** Dominated by NASA blue/dark grey, with the **AQI color scale** (Green, Yellow, Orange, Red, Purple, Maroon) as the primary way to communicate risk.
- **Mobile-First:** The map is the main focus, with interactive widgets that can be expanded or collapsed on mobile screens.
- **Actionable:** Data is immediately translated into clear health advice (e.g., instead of just "155," it says "155 - Unhealthy: Avoid strenuous outdoor activity").

II. Main Screen: Home/Map View (Component Breakdown)

The Home/Map View is the landing page. On mobile, the widgets should be collapsible cards stacked on the map. On desktop, they should be fixed-position sidebars or top bars.

A. Navigation & Header Components

Component Name	Design Description	Data Source / Logic	Responsibility
Header/Navbar	Fixed at the top. Contains the "SkyAware" logo (NASA-style font), and links to /learn (Educational Mode) and "My Profile" (simulated).	Static links.	**Saul / Hawa**
Alert Banner (Simulated)	A dismissible, high-contrast bar at the very top (e.g., orange/red) that appears if the forecast for the saved location is Unhealthy.	Logic from **Sawaneh's** API alert check.	**Saul**

Location Search Bar	Prominent input field below the header. Includes a "Use My Location" button (GPS icon).	User input →to→ Triggers API call for new AQI/Forecast data.	**Saul / Hassan**

B. Map Visualization Component

Component Name	Design Description	Data Source / Logic	Responsibility
Mapbox GL Component	Full-screen component displaying North America. Default zoom centered on the user's location.	Static, high-performance Mapbox integration.	**Saul**
TEMPO Overlay Layer (Critical)	A semi-transparent layer over the map. Colors are dictated by the AQI scale based on NO2 Or O3 concentration. The transparency allows landscape features to be seen.	Data from **GCP Cloud Storage** via /api/tempo_grid (Omar/Sawaneh).	**Saul / Omar**
Ground Station Markers	Small, circular markers (AQI color-coded) showing ground station locations. Hover/click reveals a small pop-up with the official EPA AQI value.	Data from **EPA AirNow API** via /api/current_aqi.	**Saul / Hassan**
AQI Legend	A small, fixed sidebar/widget on the map that shows the AQI color scale (0-50, 51-100, etc.) and its corresponding health name.	Static data based on EPA standards.	**Saul**

C. Information & Forecast Widgets

Component Name	Design Description	Data Source / Logic	Responsibility
Current AQI Card	A large, central card showing the current location, the large AQI number (color-coded), and the dominant pollutant.	Data from /api/current_aqi (Sawaneh/Hassan).	**Saul**
Health Advice Card	Immediately below the AQI number. Displays a concise text like "Good: Air quality is satisfactory, and air pollution poses little or no risk."	Logic implemented by **Sawaneh** in the API.	**Saul**
Validation Card	A small card for the "trust" feature. Displays two values: *Satellite (TEMPO)* vs. *Ground (EPA)*.	Data from /api/current_aqi comparison logic.	**Hassan / Saul**
72-Hour Forecast Component	A collapsible panel/card showing the forecast. Contains a chart with the hourly prediction and the 3-day max summary.	Data from /api/forecast (Omar/Sawaneh). Uses Chart.js/D3.js.	**Hassan**

III. Educational Mode View (/learn)

This view should be clean, text-heavy, and non-interactive, designed to deliver information clearly.

Component Name	Design Description	Data Source / Logic	Responsibility
Intro/TEMPO Section	Explains **What is TEMPO?** (High-level, not technical) and why it's useful (hourly, hyper-local monitoring).	Content written by **Ebrima/Hawa**.	**Hawa**
Pollutant Explainer Cards	2-3 cards (Ozone, NO2, maybe PM2.5) detailing: The source, the health impact, and the AQI level where it becomes a problem.	Content written by **Ebrima/Hawa**.	**Hawa**
Citations Footer	A clear section citing NASA and EPA for the data and the WHO for health context.	Static text based on challenge requirements.	**Ebrima / Hawa**

IV. Component Development Checklist (Saul & Hassan)

The following components must be built in Next.js/React.

Component	Responsibility	Notes
Layout.js	**Saul**	Houses Header/Navbar, global AlertBanner, and CitationsFooter. Ensures mobile responsiveness.
MapboxMap.js	**Saul**	Handles the Mapbox initialization, base layer, and map controls.
TempoOverlayLayer.js	**Saul**	*Critical:* Logic for fetching the GeoJSON/Raster link and rendering the color-coded layer on Mapbox.
GroundStationMarker.js	**Hassan**	Logic for rendering markers and the click/hover pop-up with EPA data.
CurrentAQICard.js	**Hassan**	Displays the main AQI number, Health Advice, and location. Fetches from /api/current_aqi.
ValidationBar.js	**Hassan**	Shows the Satellite vs. Ground comparison.
ForecastChart.js	**Hassan**	The chart visualization for the 72-hour forecast data.
LearnPage.js	**Hawa**	The main container for the Educational Mode content.