



Product Requirements Document (PRD)

Project: Weather Comparison App
Owner: YourCrush (GitHub Pages)
Developer: Kiro
Version: v1.0

1. Problem Statement & Goals

Choosing a new place to live often means asking, “*What’s the weather really like compared to where I live now?*” Most weather apps show only one location, or they focus on immediate forecasts without context.

The **Weather Comparison App** will allow users to:

- Instantly compare their **current location** with up to **2 additional cities** (3 total).
- See **current conditions**, **past week’s weather**, **next week’s forecast**, and **historical monthly averages (last 24 months)** side by side.
- Toggle between multiple **visualizations** (summary, side-by-side cards, charts, seasonal outlook).
- Export views for easy sharing.

This app should be **professional, user-friendly, free, and intuitive**, with all data sourced from **Open-Meteo APIs**.

2. Users & Use Cases

Primary Users

- People considering relocation (e.g., Texas → Seattle).

- Students/researchers needing historical climate context.
- General users curious about how cities compare weather-wise.

Key Use Cases

1. “How does today’s weather in Seattle compare to College Station?”
 2. “What’s the average October like in Portland vs. Austin over the past 2 years?”
 3. “Is this week’s forecast in Denver better or worse than last week?”
 4. “How much wetter is Seattle compared to Houston year-round?”
 5. “I want to quickly check my favorite 3 cities every time I open the app.”
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3. Functional Requirements

3.1 Location Handling

- Default to **browser geolocation** for current city.
- If denied/unavailable → fallback to **IP geolocation guess**, with override search box.
- Users can add up to **2 additional locations** (3 total).
- **Favorites list** stored in `localStorage` for quick re-use.
- Settings (units, theme, last selected cities, default view) also stored locally.

3.2 Weather Data (via Open-Meteo)

- **Now:** temp, feels-like, humidity, wind speed/gust, precipitation type/intensity, probability, rate, total (1h/24h), cloud cover, pressure, UV, sunrise/sunset.
- **Past 7 days:** daily min/max temp, precip totals, humidity avg, wind avg/max.
- **Next 7–10 days:** forecast of temp, precip probability & totals, wind, humidity.

- **Historical (24 months):** monthly averages (temp min/max/mean, precip totals & wet days, humidity, wind).
- **Seasonal Outlook:** comparison of **this week vs the same week last year** for selected cities.

3.3 Visualization Modes

- **Summary (default):** At-a-glance insights. Example:

“Seattle is 12°F cooler and +30% wetter than College Station today.”

- **Side-by-side Cards:** Current / Past 7 Days / Next 7 Days for each city.
- **Charts:**
 - Line chart: 7-day temp (min/max/feels-like).
 - Bar chart: 7-day precipitation (amount & probability).
 - Line chart: 7-day wind (avg & gust).
 - Line chart: historical monthly averages (24 months, multi-series).
 - Seasonal Outlook overlay (this week vs same week last year).
- **Toggle Controls:**
 - Switch between visualizations.
 - Lock shared y-axis vs auto-scale.
 - Metric/Imperial toggle.
 - Light/Dark mode toggle.

3.4 Export & Sharing

- **PNG Screenshot Export** using [html2canvas](#).

- **CSV Export** for current chart's dataset.
 - **Shareable Links:** encode selected cities, active tab, units, theme in URL.
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4. Non-Functional Requirements

- **Hosting:** GitHub Pages (static SPA, client-only fetch).
 - **Performance:**
 - Cache current/forecast data 15 min.
 - Cache historical data 24 hrs.
 - **Reliability:** Graceful error handling if API down; "Data unavailable" placeholder.
 - **Usability:** Minimal clicks, intuitive navigation, responsive layout (desktop + mobile).
 - **Accessibility:**
 - WCAG AA contrast.
 - Keyboard navigation (tab order, focus rings).
 - ARIA labels for charts (table summaries as fallback).
 - **Privacy:** No data collection beyond `localStorage`.
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5. Technical Considerations

- **Framework:** React (recommended) with Vite build → deploy to GitHub Pages.
- **UI:** TailwindCSS for quick, clean styling.
- **Charts:** Recharts (line, bar, area).

- **Storage:** `localStorage` for settings & favorites.
 - **APIs:**
 - [Open-Meteo Forecast API](#) (forecast & past week).
 - [Open-Meteo Archive API](#) (historical 24 months).
 - Open-Meteo Geocoding API (location search).
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6. UX / UI Outline

- **Landing State:**
 - Auto-load current location + last saved cities.
 - Show **Summary View** first.
 - **Top Bar:**
 - Search box (autocomplete)
 - Favorites menu
 - Settings (units, theme)
 - **Main Panel:**
 - Toggle buttons: *Summary* | *Cards* | *Charts* | *Seasonal Outlook*
 - City comparison grid or chart depending on mode
 - **Footer:**
 - “Weather Compare by YourCrush” + GitHub link
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7. Testing & Acceptance Criteria

- ☒ App loads with geolocation; falls back gracefully if blocked.
 - ☒ User can add/search up to 2 additional cities.
 - ☒ Data displays for current, past week, forecast, historical averages.
 - ☒ Summary view correctly computes differences between cities.
 - ☒ Charts display accurate multi-series overlays.
 - ☒ Favorites persist across sessions.
 - ☒ Export (PNG/CSV) works.
 - ☒ Accessible with keyboard & screen reader.
 - ☒ Responsive (works on 360px mobile screens).
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8. Roadmap

v1.0

- Current, past week, next week, historical averages (24 months).
- Summary / Cards / Charts / Seasonal Outlook views.
- Export & sharing.
- Local persistence of settings & favorites.

v1.1+ (Future Enhancements)

- Air Quality integration.
- Radar/precipitation maps.
- Severe weather alerts feed.
- PWA offline caching.

- Additional data sources (Meteostat, AQICN, etc.).