

Drone Weather Route Planner - Complete Setup Guide

This guide will help you set up and run the Drone Weather Route Planner application, which optimizes drone flight routes based on weather conditions.

Prerequisites

- Node.js (v16.0.0 or later)
- NPM (v7.0.0 or later)
- A Google Maps API key (with Directions, Places, and JavaScript APIs enabled)
- OpenWeatherMap API key
- WeatherAPI.com API key

Quick Start

Follow these steps to get the application running:

1. Clone the repository

bash

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```
git clone https://github.com/yourusername/drone-weather-planner.git
cd drone-weather-planner
```

2. Create a `.env` file in the root directory with your API keys:

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```
REACT_APP_GOOGLE_MAPS_API_KEY=your_google_maps_api_key
REACT_APP_OPENWEATHER_API_KEY=your_openweather_api_key
REACT_APP_WEATHERAPI_KEY=your_weatherapi_key
```

3. Run the one-click setup script:

bash

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```
chmod +x setup.sh
./setup.sh
```

The script will:

- Install all dependencies
- Build the application
- Start the development server
- Open your browser to <http://localhost:3000>

Drone Flight Weather Thresholds (Best Practices)

The application comes with default thresholds based on industry standards for consumer drones:

Weather Parameter	Recommended Limit	Description
Wind Speed	20 mph (32 km/h)	Most consumer drones struggle with stability above this speed
Precipitation	Any precipitation	Even light rain can damage electronics and motors
Visibility	3 miles (4.8 km)	Maintaining visual line of sight becomes difficult below this
Temperature	32°F to 104°F (0°C to 40°C)	Battery performance degrades outside this range

These thresholds can be adjusted in the dashboard settings based on your specific drone's capabilities.

Manual Setup (Alternative to One-Click Script)

If you prefer to set up manually:

1. Install frontend dependencies:

bash

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```
cd frontend
npm install
```

2. Install backend dependencies:

bash

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```
cd ../backend
npm install
```

3. Start the backend server:

bash

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```
npm start
```

4. In a new terminal, start the frontend:

bash

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```
cd ../frontend  
npm start
```

Customizing Weather Thresholds

1. Navigate to the Settings page in the dashboard
2. Under "Flight Parameters," adjust the sliders for each weather parameter
3. Save your changes - the route planner will use these thresholds for all future calculations

Troubleshooting

- **API Key Issues:** Ensure your API keys are correctly entered in the `.env` file
- **Installation Errors:** Try running `npm clean-cache` before reinstalling
- **Map Not Loading:** Check browser console for Google Maps API errors

Support

For additional help, please submit an issue on the GitHub repository or contact support@droneweatherplanner.example.com.