

**COMPARATIVE ANALYSIS**

**BETWEEN LOCAL & INTERNATIONAL BUILDING**

**- Educational Buildings -**

**THE AMERICAN UNIVERSITY IN CAIRO**

**-NEW CAIRO, EGYPT -**

**&**

**FACHHOCHSCHULE BONN - RHEIN – SIEG**

**- BONN, GERMANY -**

**By**

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**Mohammad Albdour**

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**Faculty of Engineering, Cairo University**

**Giza, EGYPT**

# Methodology

## INTEGRAL DESIGN APPROACH

### REGIONAL SYSTEM

#### Climate Analysis

Solar Radiation

Prevailing Wind

Comfort Zone

Daily Data

Weekly Data

Monthly Data

Best Orientation

Conclusion

The Natural System

Geomorphology System

Surface Cover System

### URBAN SYSTEM

General Data

Building Form

Mass and Architectural Space

Orientation

Sustainability and Renewable Energy

The Concentration of Activities, Spaces  
and Axes of Movement

### INNER BUILDING

#### Outer Casing System

#### Mass System

Orientation

Shading

Form

#### Special Features

Insulation

Lighting

Heating

Cooling

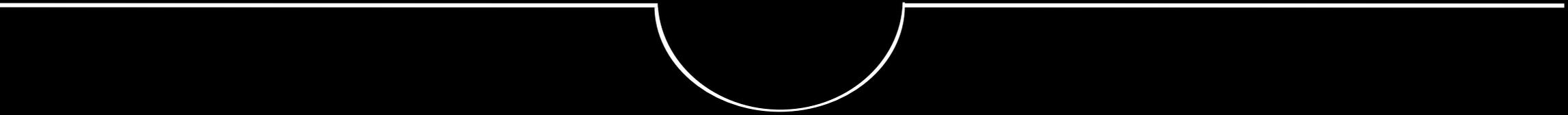
Ventilation

Materials

Renewable Energy

Conclusion and Recommendations

REGIONAL SYSTEM



**Climate Analysis** | THE AMERICAN UNIVERSITY IN CAIRO

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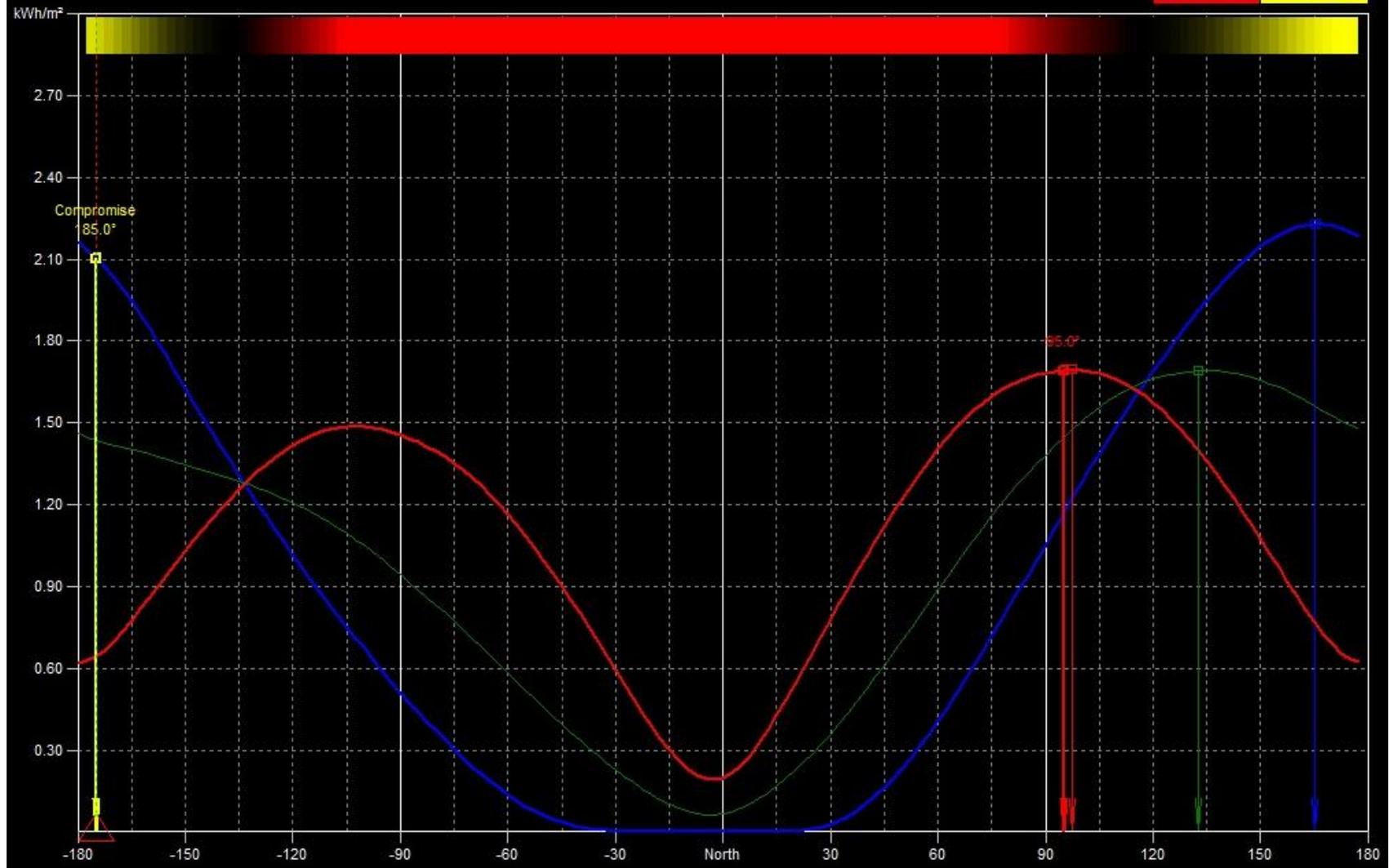
INNER BUILDING

Conclusion and Recommendations

### Optimum Orientation

Location: CAIRO, EGY  
Orientation based on average daily incident radiation on a vertical surface.

Underheated Stress: 78.5  
Overheated Stress: 958.9  
Compromise: 185.0°  
© Weather Tool



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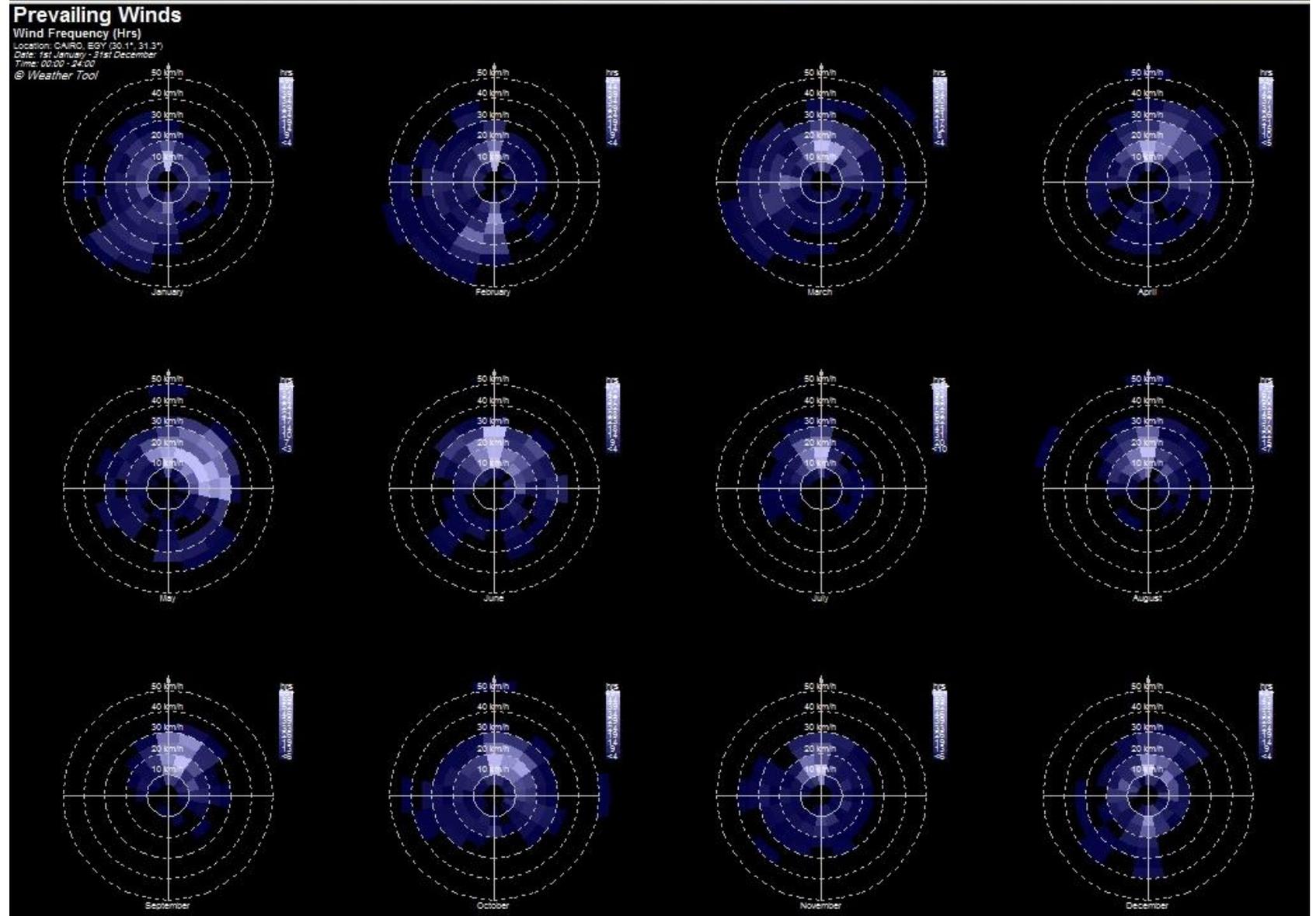
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## INNER BUILDING

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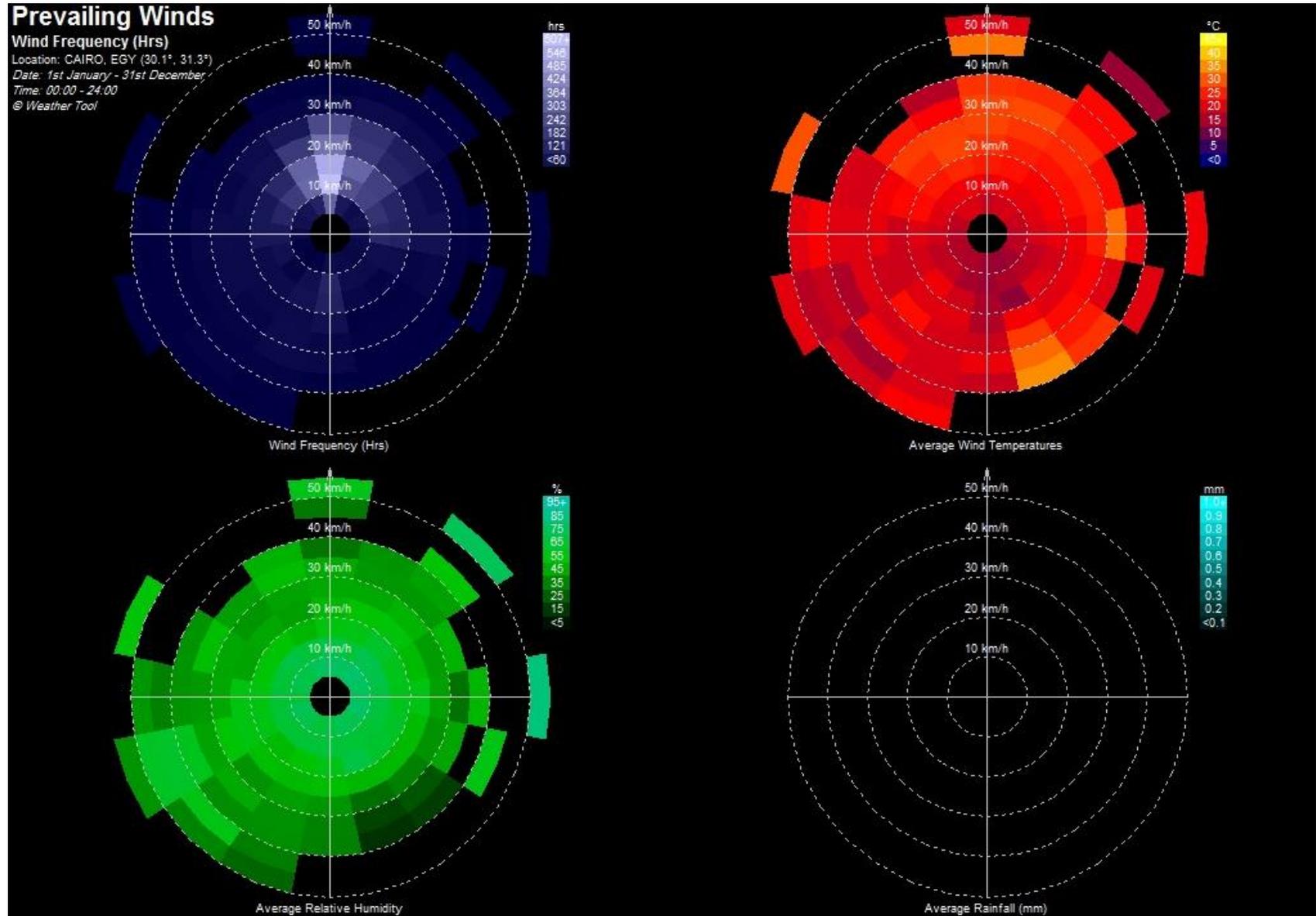
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## Prevailing Winds

### Wind Frequency (Hrs)

Location: CAIRO, EGY (30.1°, 31.3°)  
Date: 1st January - 31st December  
Time: 00:00 - 24:00  
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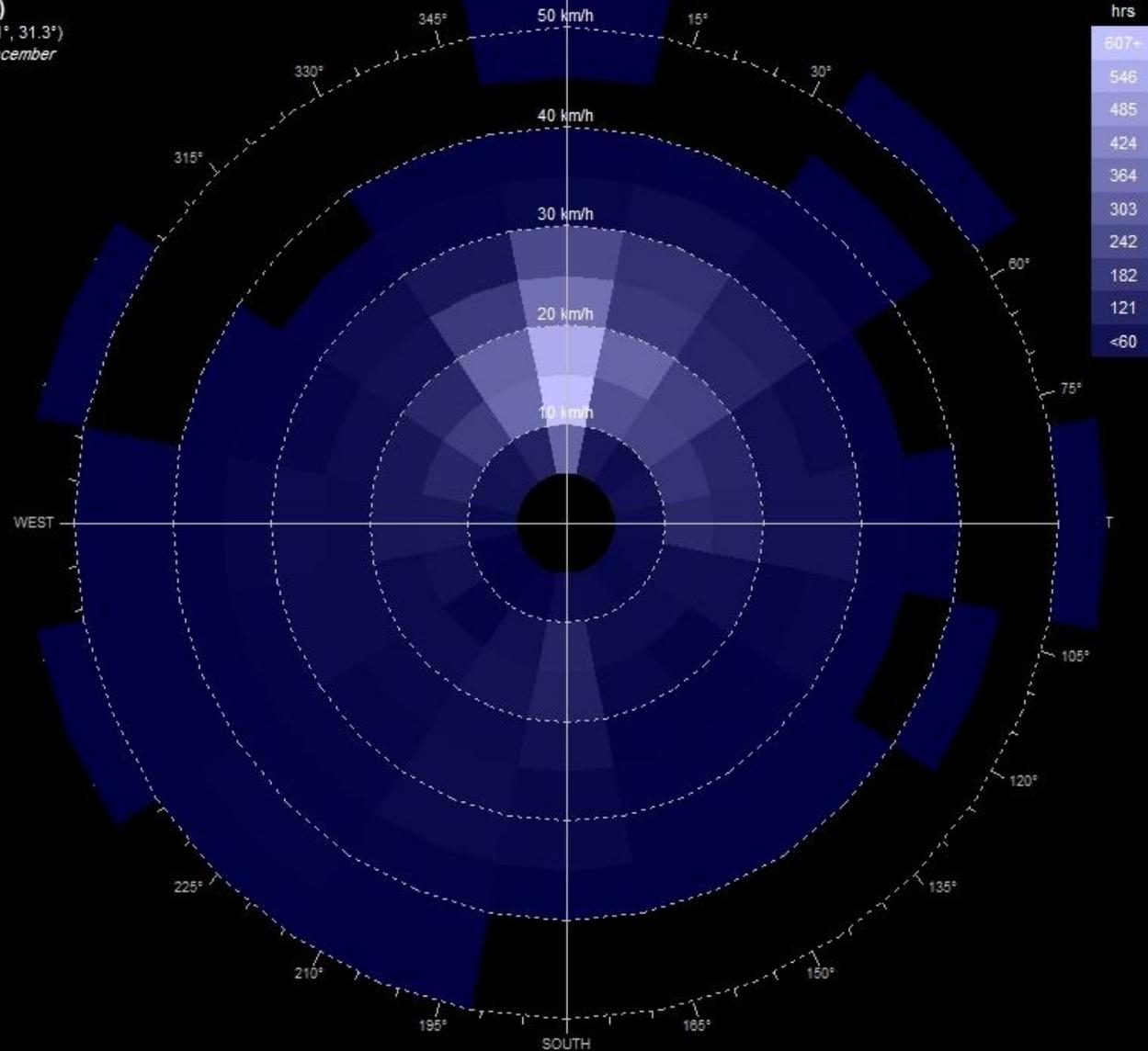
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## Psychrometric Chart

Location: CAIRO, EGY

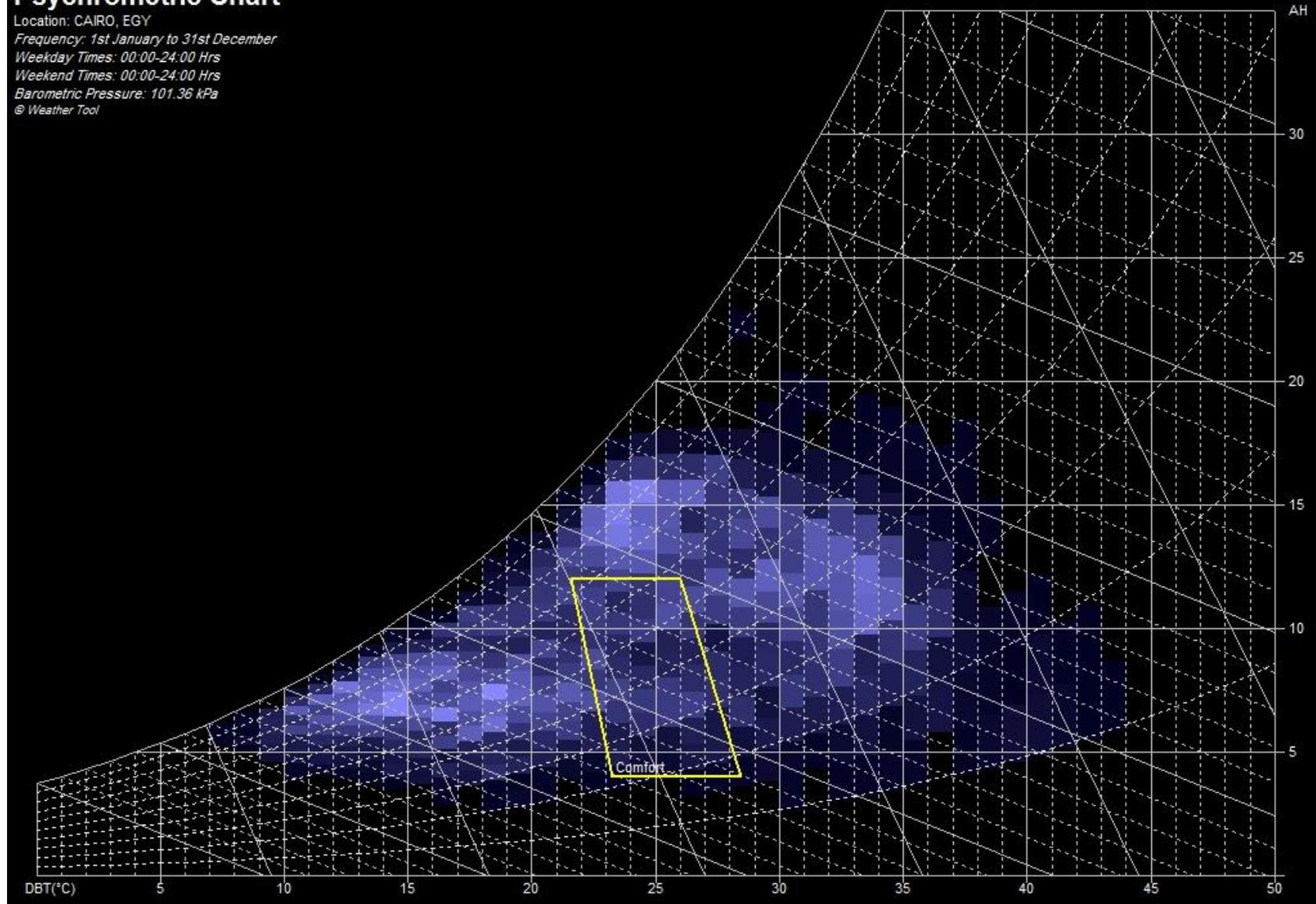
Frequency: 1st January to 31st December

Weekday Times: 00:00-24:00 Hrs

Weekend Times: 00:00-24:00 Hrs

Barometric Pressure: 101.36 kPa

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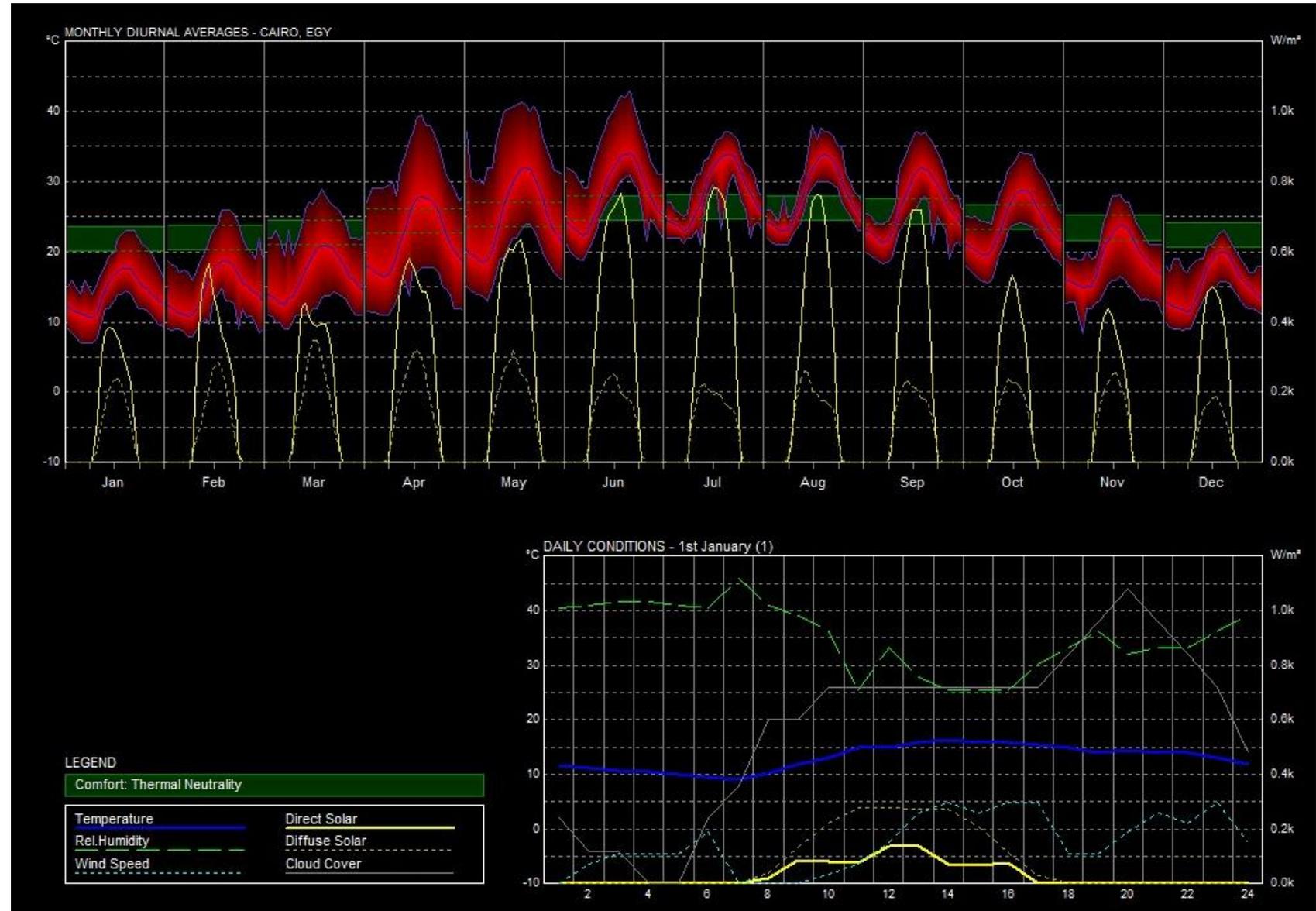
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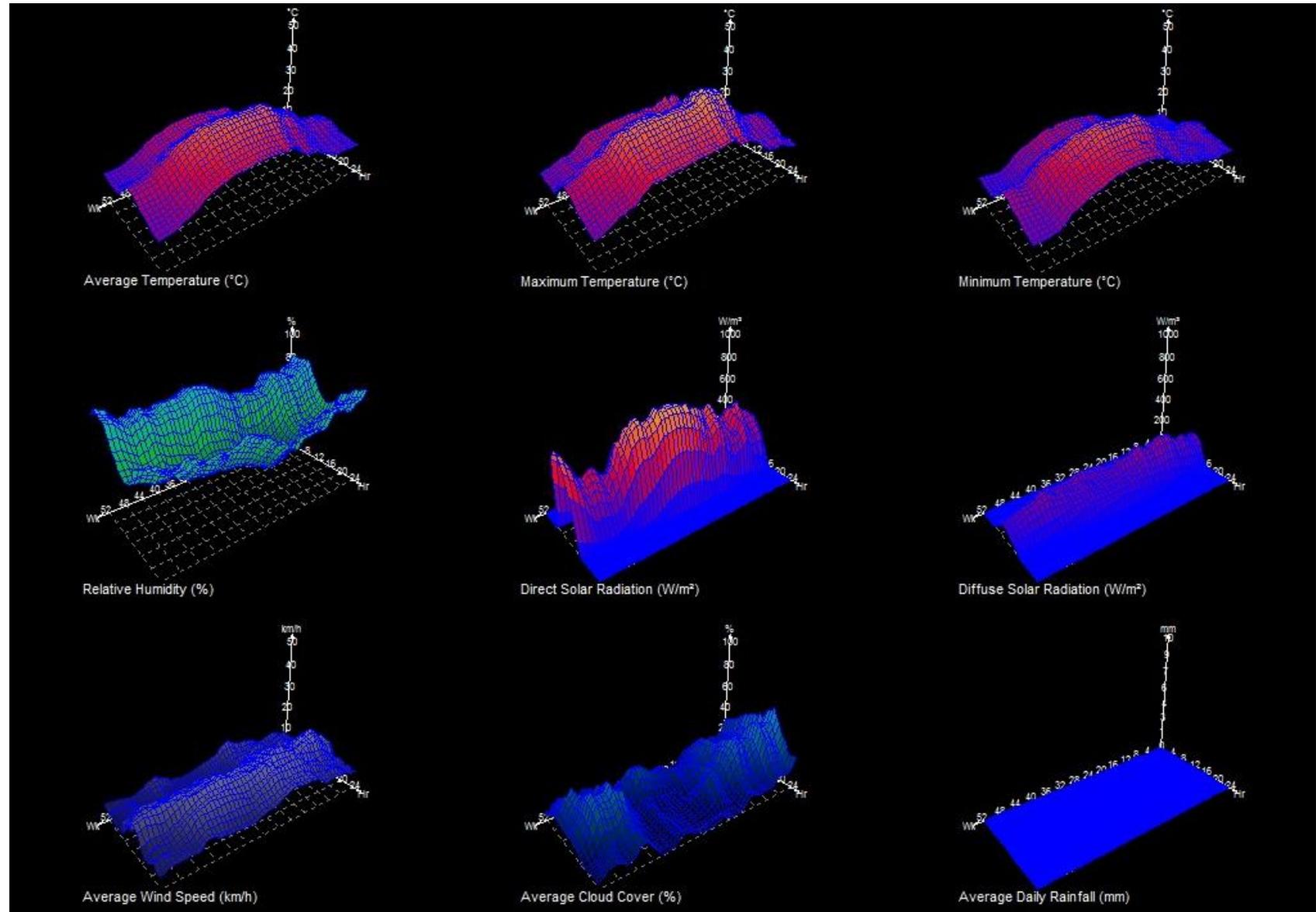
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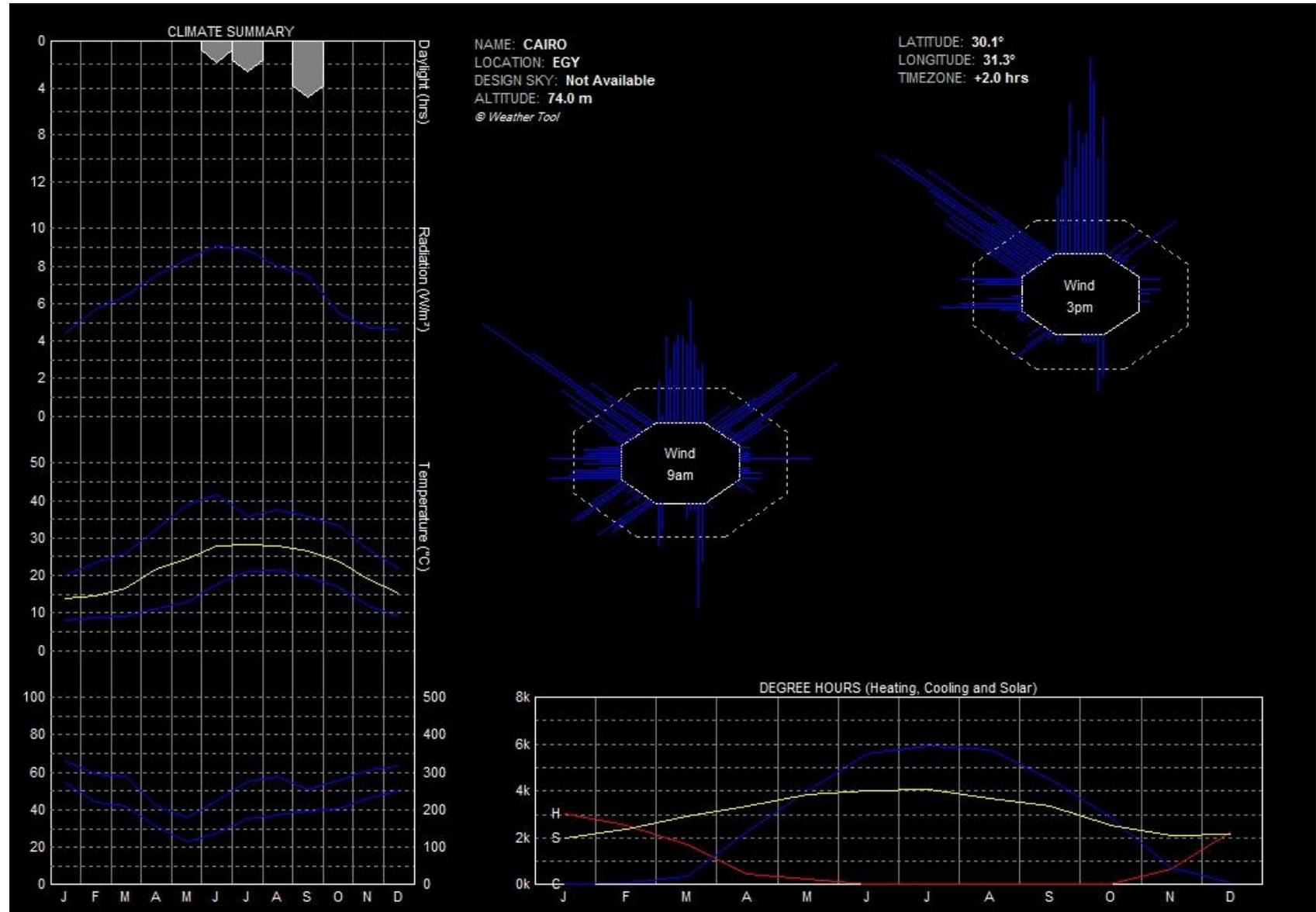
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This result calculated By ECOTECT Software

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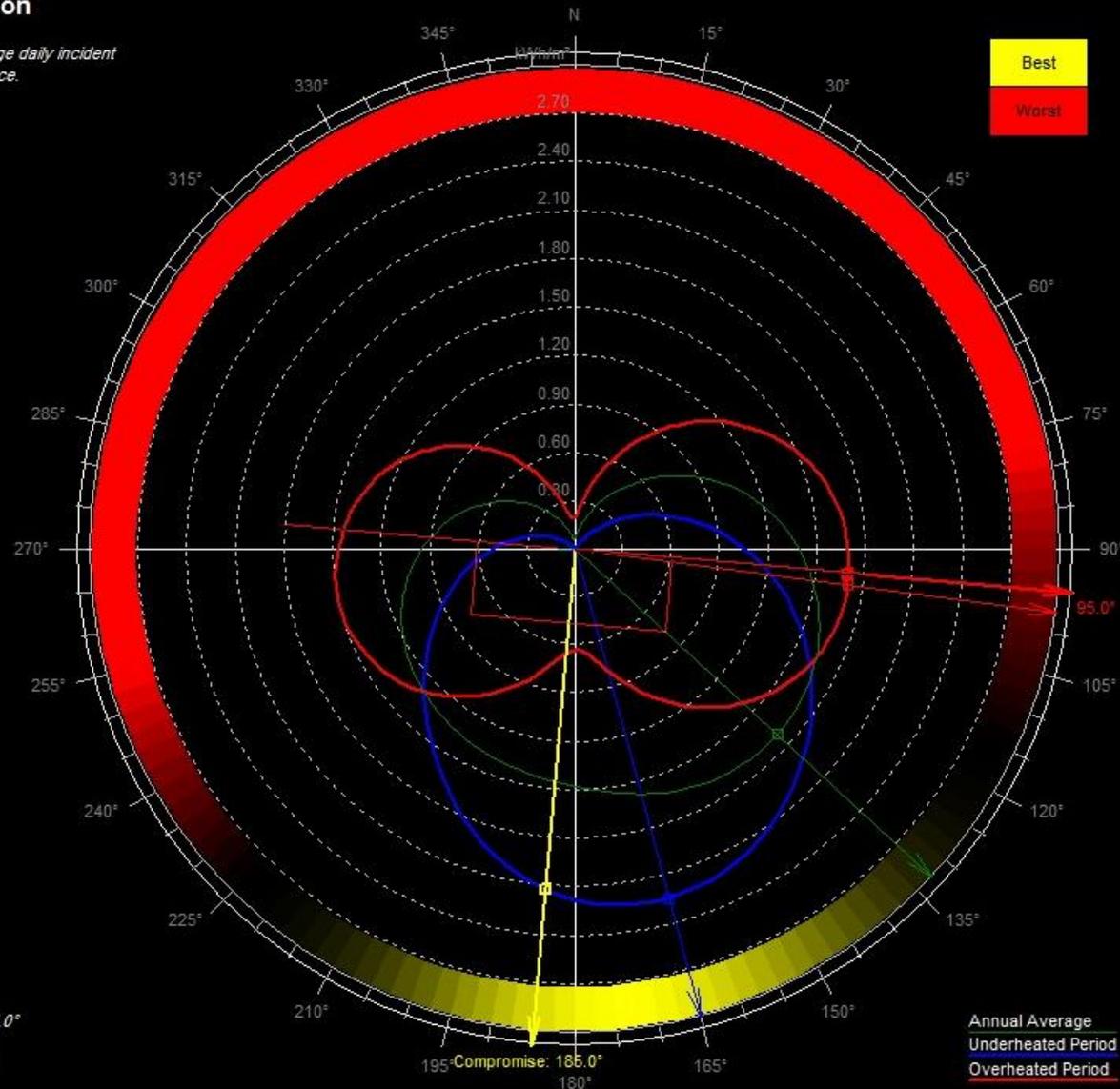
Orientation based on average daily incident radiation on a vertical surface.

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Avg. Daily Radiation at -175.0°  
 Entire Year: 1.44 kWh/m²  
 Underheated: 2.11 kWh/m²  
 Overheated: 0.64 kWh/m²

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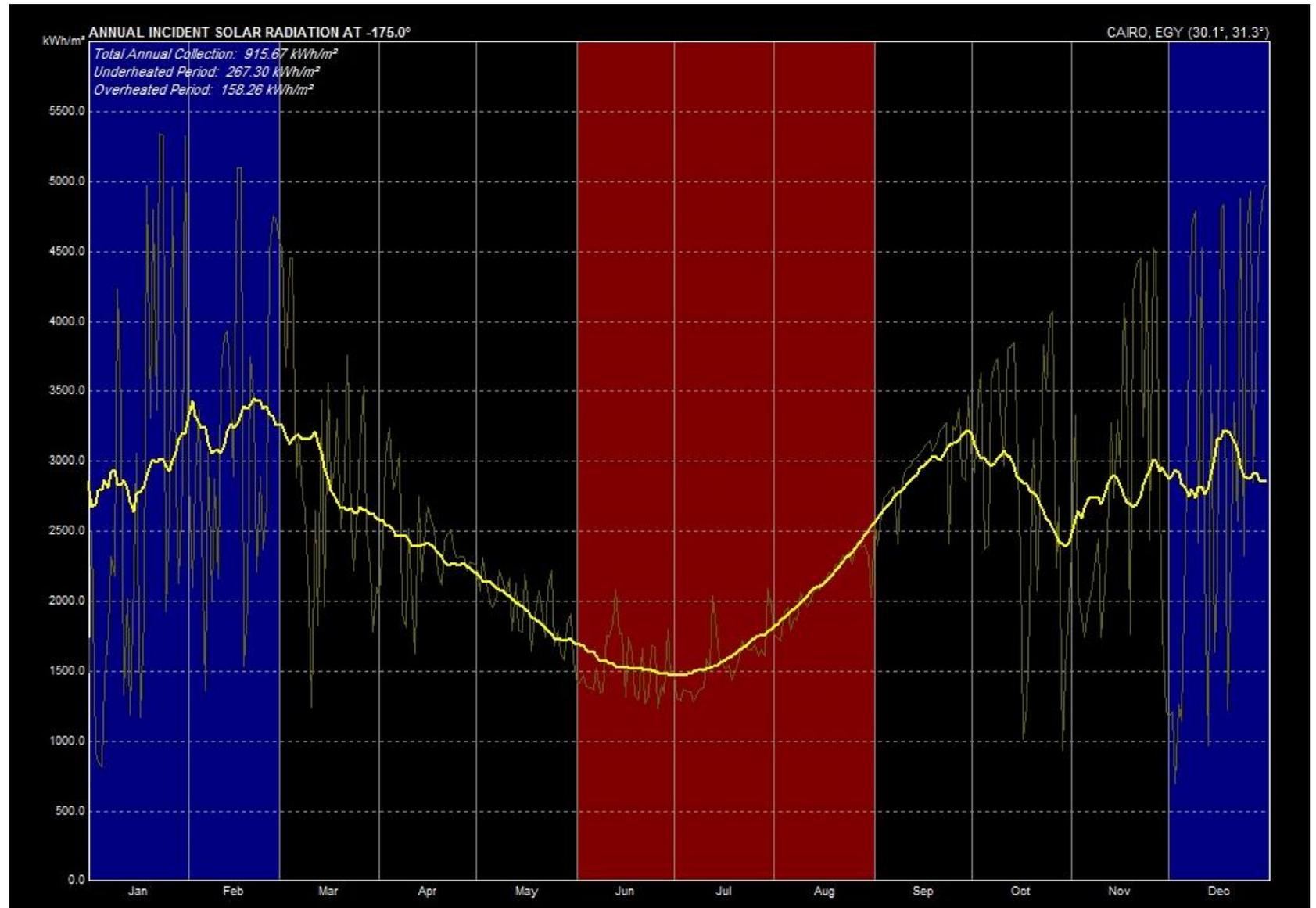
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