

Address Hourly AQI API

**Environmental monitoring
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solutions for Cities**

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Introduction

NB: The material contained in this document is confidential and proprietary to Sparrow Analytics SA.

The Address Hourly AQI API is a web service which allows you to request and retrieve averaged monthly AQI and pollutants data collected by Sparrow nodes fleet, aggregated by dates, hours and geohashes (by rectangular areas of 76 m²) for specified address, including neighboring areas and average hourly city measurements (currently available for Basel, Bern, Geneva, Lausanne and Zurich).

The API is using REST-Like operations over HTTP GET requests with parameters encoded into the URL address. The response is encoded in JSON format, using HTTP status codes to verify successful data retrieval. It is designed to be easy to use and implement in any third-party software or service that is using web requests for data interchange. Web service is using a scalable cloud infrastructure to be responsive and sustainable for numerous simultaneous connections.

Please, note that dates and times in the API are always in GMT (UTC +0) timezone.

In order to use the Address Hourly AQI API you must receive a private authentication. Please make sure to keep the API key safe and unexposed to the public.

Get Hourly AQI Data for Address

Endpoint URL

GET <https://api.sparrow.city/get/aqi-address/>

Request Parameters

All parameters are required.

Parameter	Type	Description
api_key	String	Private API key for authorization
dates	String	Dates separated by comma (see Datetime Format)
address	String	Postal address

Successful JSON Response

Parameter	Type	Description
result	Integer	Result code (see Result Codes)
body	Object	Array of measurements objects
↪ address	Object	Address details from Address Lookup API
↪↪ lat	Float	Location coordinates latitude
↪↪ lon	Float	Location coordinates longitude
↪↪ formatted	String	Display address
↪↪ country	String	Country component of the address
↪↪ state	String	State component of the address
↪↪ city	String	City component of the address
↪↪ postcode	String	Postcode or ZIP code of the address
↪↪ district	String	District component of the address

↪ street	String	Street component of the address
↪ housenumber	String	House number component of an address
↪ result_type	String	Found location type
↪ geohash	String	Geohash (see Geohash)
↪ measurements	Object	Array of measurements objects
↪ date	String	Measurements date key (see Date Format)
↪↪ hour	String	Measurements hour key (see Time Format)
↪↪↪ group	String	Measurements distance group (see Distance Group)
↪↪↪↪ geohash	String	Measurements geohash key (see Geohash)
↪↪↪↪↪ aqi	Integer	Averaged AQI value for area (see AQI)
↪↪↪↪↪ pollutants	Object	List of averaged pollutants values
↪↪↪↪↪↪ pm1	Float	Fine particulate matter with a size of 1 µm (µg/m³)
↪↪↪↪↪↪ pm25	Float	Fine particulate matter with a size of 2.5 µm
↪↪↪↪↪↪ pm10	Float	Fine particulate matter with a size of 10 µm (µg/m³)
↪↪↪↪↪↪ co	Float	Carbon monoxide concentration (ppb)
↪↪↪↪↪↪ co2	Float	Carbon dioxide concentration (ppm)
↪↪↪↪↪↪ no2	Integer	Nitrogen dioxide concentration (ppb)
↪↪↪↪↪↪ o3	Float	Ozone concentration (ppb)
↪ city_average	Object	Array of city measurements objects
↪ date	String	Measurements date key (see Date Format)
↪↪ hour	String	Measurements hour key (see Time Format)
↪↪↪ aqi	Integer	Averaged AQI value for the city (see AQI)
↪↪↪ pollutants	Object	List of averaged pollutants values
↪↪↪↪ pm1	Float	Fine particulate matter with a size of 1 µm (µg/m³)
↪↪↪↪ pm25	Float	Fine particulate matter with a size of 2.5 µm
↪↪↪↪ pm10	Float	Fine particulate matter with a size of 10 µm (µg/m³)
↪↪↪↪ co	Float	Carbon monoxide concentration (ppb)
↪↪↪↪ co2	Float	Carbon dioxide concentration (ppm)

no2	Integer	Nitrogen dioxide concentration (ppb)
o3	Float	Ozone concentration (ppb)

Unsuccessful JSON Response

Parameter	Type	Description
result	Integer	Result code (see Result Codes)
message	String	Short error description

Date Format

Date is using an [ISO-8601](#) date format (YYYY-MM-DD). Example, for the 31st of January 2024:

2024-01-31

Time Format

Time is using an [ISO-8601](#) date format (HH:MM). Example, for the eight hours of evening time:

20:00

Distance Group

All measurements are allocated by distance groups represented by 3 letters: A, B or C. Measurements are initially aggregated by geohashes (see [Geohash](#)), but the service will also return data from neighboring areas. The table below shows where neighboring geohashes are located, considering "A" is the exact requested geohash.

C	C	C	C	C
C	B	B	B	C
C	B	A	B	C
C	B	B	B	C
C	C	C	C	C

Result Codes

Result Code	Description
200 ●	Successful request
400 ●	Bad request
401 ●	Unauthorized
403 ●	Forbidden
404 ●	Not found
405 ●	Method not allowed
429 ●	Too many requests
500 ●	Internal server error
501 ●	Not implemented
503 ●	Service unavailable

Request Example

```
$ curl -X GET  
'https://api.sparrow.city/get/aqi-geohash/?address=Chem%20des%20Chalets%205%201279%20Chavannes-de-Bogis&api_key={API_KEY}'
```

Successful Response Example

```
{  
  "result": 200,  
  "body": {  
    "address": {  
      "lat": 46.342414,  
      "lon": 6.163235,  
      "formatted": "Chemin Des Chalets 5, 1279 Chavannes-de-Bogis, Switzerland",  
      "country": "Switzerland",  
      "state": "Vaud",  
      "city": "Chavannes-de-Bogis",  
      "postcode": "1279",  
    },  
  },  
}
```

```
"district": "Chavannes-de-Bogis",
"street": "Chemin Des Chalets",
"houzenumber": "5",
"result_type": "building",
"geohash": "u0hrshru"
},
"measurements": {
  "2024-07-24": {
    "07:00": {
      "b": {
        "u0hrshp": {
          "aqi": 27,
          "pollutants": {
            "pm1": 1.45,
            "pm25": 1.45,
            "pm10": 1.45,
            "co": 0,
            "co2": 741,
            "no2": 28.3,
            "o3": 33.93
          }
        },
        "u0hrshq": {
          "aqi": 22,
          "pollutants": {
            "pm1": 1.1,
            "pm25": 1.1,
            "pm10": 1.1,
            "co": 0,
            "co2": 697,
            "no2": 23.4,
            "o3": 32.6
          }
        }
      }
    },
    "a": {
      "u0hrshr": {
        "aqi": 14,
        "pollutants": {
          "pm1": 1.31,
          "pm25": 1.53,
          "pm10": 1.78,
          "co": 0,
          "co2": 722.22,
          "no2": 14.38,
          "o3": 32.93
        }
      }
    }
  }
},
```

```
"06:00": {
  "a": {
    "u0hrshr": {
      "aqi": 10,
      "pollutants": {
        "pm1": 0.83,
        "pm25": 1.02,
        "pm10": 1.02,
        "co": 96.16,
        "co2": 448.44,
        "no2": 10.78,
        "o3": 0
      }
    }
  }
},
"08:00": {
  "a": {
    "u0hrshr": {
      "aqi": 9,
      "pollutants": {
        "pm1": 1.4,
        "pm25": 1.4,
        "pm10": 1.4,
        "co": 89.5,
        "co2": 550,
        "no2": 9.4,
        "o3": 0
      }
    }
  }
},
"09:00": {
  "a": {
    "u0hrshr": {
      "aqi": 8,
      "pollutants": {
        "pm1": 1.2,
        "pm25": 2.9,
        "pm10": 2.9,
        "co": 85.1,
        "co2": 522,
        "no2": 8.4,
        "o3": 0
      }
    }
  }
},
"2024-07-25": {
```

```
"15:00": {
  "b": {
    "u0hrshp": {
      "aqi": 8,
      "pollutants": {
        "pm1": 4.02,
        "pm25": 5.25,
        "pm10": 5.25,
        "co": 80.63,
        "co2": 652.67,
        "no2": 8.2,
        "o3": 113.83
      }
    },
    "u0hrshq": {
      "aqi": 15,
      "pollutants": {
        "pm1": 1.6,
        "pm25": 1.83,
        "pm10": 5.77,
        "co": 44.72,
        "co2": 634.83,
        "no2": 15.43,
        "o3": 67.3
      }
    }
  },
  "a": {
    "u0hrshr": {
      "aqi": 7,
      "pollutants": {
        "pm1": 1.04,
        "pm25": 1.23,
        "pm10": 2.26,
        "co": 0,
        "co2": 711.78,
        "no2": 6.93,
        "o3": 20.83
      }
    }
  }
},
"07:00": {
  "a": {
    "u0hrshr": {
      "aqi": 10,
      "pollutants": {
        "pm1": 1.74,
        "pm25": 2.4,
        "pm10": 5.82,
```

```
        "co": 23.24,  
        "co2": 665.6,  
        "no2": 10.3,  
        "o3": 40.54  
    }  
}  
,  
"b": {  
    "u0hrshx": {  
        "aqi": 9,  
        "pollutants": {  
            "pm1": 1.73,  
            "pm25": 2.27,  
            "pm10": 5.1,  
            "co": 21.33,  
            "co2": 669.25,  
            "no2": 9.05,  
            "o3": 39.7  
        }  
    }  
},  
"c": {  
    "u0hrshz": {  
        "aqi": 7,  
        "pollutants": {  
            "pm1": 1.75,  
            "pm25": 2.18,  
            "pm10": 2.18,  
            "co": 23.37,  
            "co2": 674.5,  
            "no2": 7.1,  
            "o3": 39.9  
        }  
    }  
},  
"09:00": {  
    "a": {  
        "u0hrshr": {  
            "aqi": 9,  
            "pollutants": {  
                "pm1": 1.3,  
                "pm25": 1.3,  
                "pm10": 9.9,  
                "co": 8.7,  
                "co2": 754,  
                "no2": 0.7,  
                "o3": 6.9  
            }  
        }  
    }  
}
```

```
}
},
"14:00": {
  "a": {
    "u0hrshr": {
      "aqi": 5,
      "pollutants": {
        "pm1": 0.99,
        "pm25": 1.16,
        "pm10": 2.43,
        "co": 0,
        "co2": 712.65,
        "no2": 5.38,
        "o3": 19.27
      }
    }
  }
}
},
"city_average": {
  "2024-07-24": {
    "05:00": {
      "aqi": 15,
      "pollutants": {
        "pm1": 1.68,
        "pm25": 2.36,
        "pm10": 4,
        "co": 44.72,
        "co2": 3447.81,
        "no2": 15.69,
        "o3": 24.13
      }
    },
    "06:00": {
      "aqi": 18,
      "pollutants": {
        "pm1": 1.84,
        "pm25": 2.55,
        "pm10": 4.1,
        "co": 42.11,
        "co2": 3216.21,
        "no2": 12.31,
        "o3": 33.17
      }
    }
  }
}
}
```

Unsuccessful Response Example

```
{  
  "result": 401,  
  "message": "Unauthorized"  
}
```