Example analysis

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1 Import libraries

Import installed libraries.

```
import sys
from pathlib import Path
import pandas as pd
import json
```

Set root directory.

```
ROOT = Path(sys.path[0]).parent
sys.path.append(str(ROOT.joinpath('src')))
```

Import project modules and functions.

```
from simulategrid import capteurs_numeric
from pylib import simulate_point
```

2 Import data

Read table of sensor locations.

```
sensors = pd.read_csv(ROOT.joinpath('data', 'capteurs.csv'), sep='\t')
xycoord = capteurs_numeric(sensors)
```

Read seed values.

```
with open(ROOT.joinpath('data', 'seedvalues.json')) as f:
     seeds = json.load(f)
```

3 Validation

Launching from (x = 2.5 km, y = 3.1 km, r = 10 m), verification from sieprog.ch says:

> S2 5.35 détections/paquet (±2.00)
>
> S3 2.10 détections/paquet (±1.00)
>
> Les autres capteurs ne détectent aucun paquet.

For 100 packets, we expect 535(±)200 for S2 and 210(±)100 for S3. The following output confirms that our code works properly.

```
out = simulate_point(xycoord, 2500, 3100, 10, 100, seeds['point'])
for i, paq in enumerate(out['paquets']):
    print(f'S{i:d}  {paq:d} paquets\n')
print(f"Plausibilité: {out['plausibilite']:0.5f}\n")
```

S0 0 paquets

S1 0 paquets

S2 703 paquets

S3 192 paquets

S4 0 paquets

S5 0 paquets

Plausibilité: 0.01139