

esn 参数设置:

```
1 esn_param = {'n_readout': 1000,  
2             'n_components': 20,  
3             'damping': 0.5,  
4             'weight_scaling': 0.9,  
5             'discard_steps': 0,  
6             'random_state': None}
```

box-cox 变换:

设 $wp \sim N(\mu, \sigma^2)$

则 $wp_{ln} = \ln(wp + 0.01)$

$wp_{pred} = \exp(f(X, wp_{ln})) - 0.01$

预测方差: $Var(wp_{pred}) = e^{2\mu + \sigma^2} (e^{\sigma^2} - 1)$

1. 西班牙数据集

train index: [6426, 10427] train_len: 4000

test index: [14389, 15390] test_len: 1000

- 输入特征:

```
1 'wind_speed', 'sin(wd)', 'cos(wd)', 【t期】  
2 'wind_speed-1', 'sin(wd)-1', 'cos(wd)-1', 'wind_power-1' 【t-1期】
```

- 输出: wind_power

box-cox 转换前后数据分布:

---- Spain dataset ----

```
get_data(hour_num=1, transform='sin+cos', drop_time=True, scale=True)
```

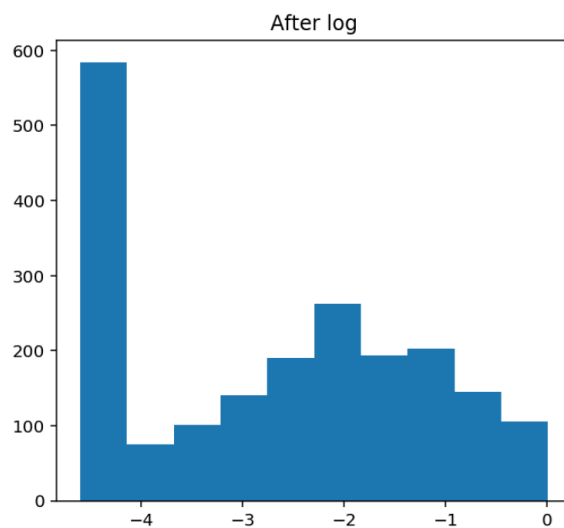
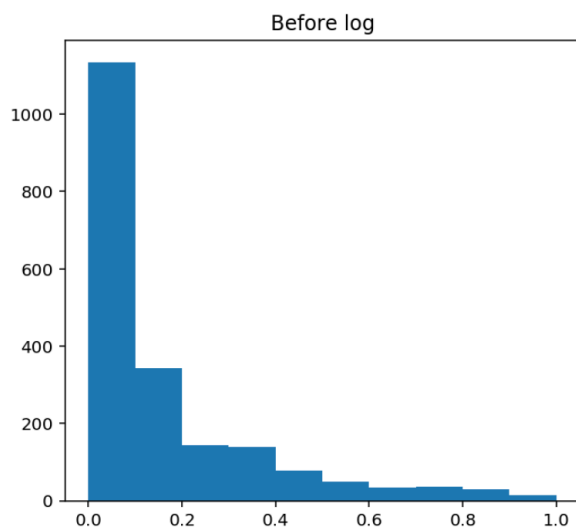
Input space: Index(['wind_speed', 'sin(wd)', 'cos(wd)', 'wind_speed-1', 'sin(wd)-1',

'cos(wd)-1', 'wind_power-1'],
dtype='object')

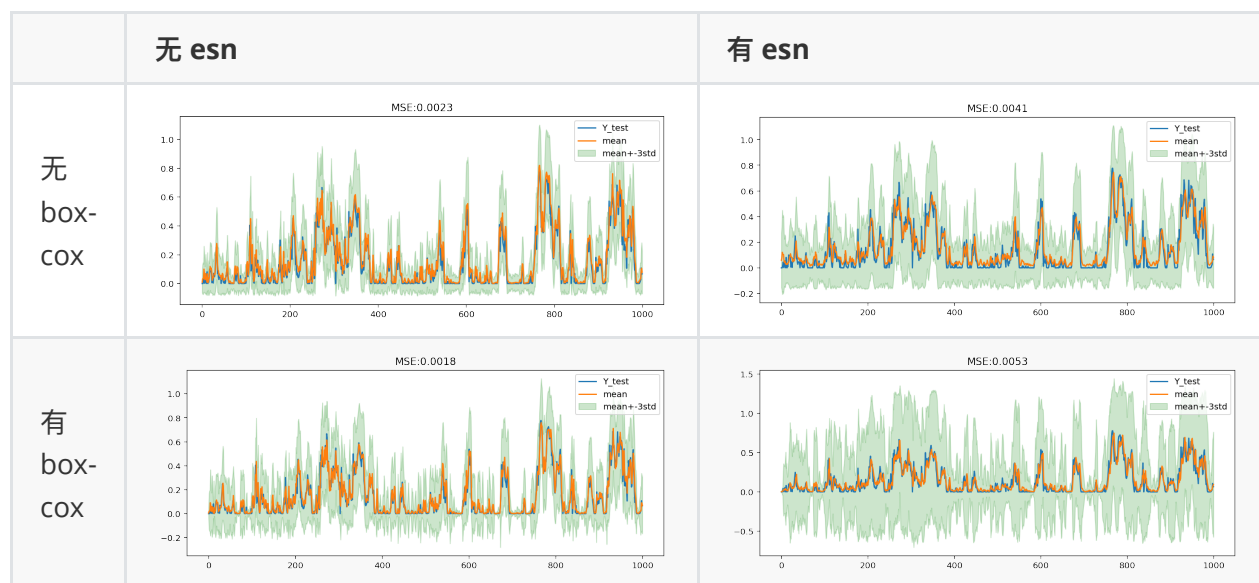
train index: [6426, 8427] train_len: 2000

test index: [14389, 15390] test_len: 1000

: Text(0.5, 1.0, 'After log')



结果:



2. 美国数据集

train index: [3001, 7002] train_len: 4000

test index: [2000, 3001] test_len: 1000

- 输入特征:

```

1 'wind_speed', 'sin(wd)', 'cos(wd)', 【t期】
2 'wind_speed-1', 'sin(wd)-1', 'cos(wd)-1', 'wind_power-1' 【t-1期】

```

• 输出: wind_power

box-cox 转换前后数据分布:

---- US dataset ----

```
get_data2(hour_num=1, transform='sin+cos', drop_time=True, drop_esle=True, scale=True)
```

Data: ['相近8个地点2012年数据', '20738-2012.csv']

```
Input space: Index(['wind_speed', 'sin(wd)', 'cos(wd)', 'wind_speed-1', 'sin(wd)-1',
```

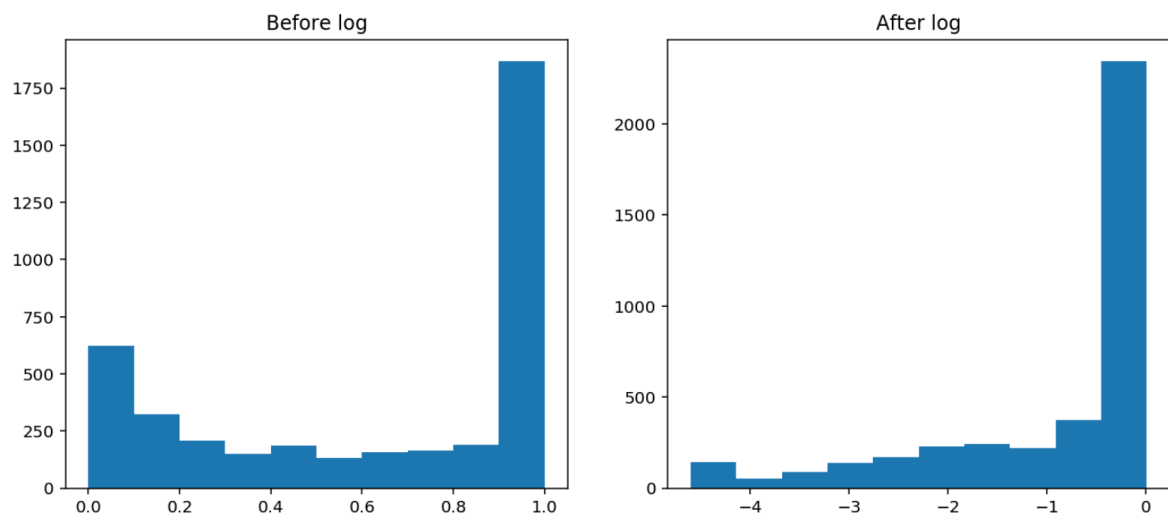
```
                  'cos(wd)-1', 'wind_power-1'],
```

```
                  dtype='object')
```

```
train index: [3001, 7002] train_len: 4000
```

```
test index: [2000, 3001] test_len: 1000
```

: Text(0.5, 1.0, 'After log')



结果:

