



## Spatial Analysis

### 1- Squidpy: a scalable framework for spatial omics analysis

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(provided by Clarivate)

**Volume**

19

**Issue**

2

**Page**

171-+

**DOI**

10.1038/s41592-021-01358-2

**Published**

FEB 2022

**Early Access**

JAN 2022

**Indexed**

2022-02-08

**Document Type**

Article

**Abstract**

Spatial omics data are advancing the study of tissue organization and cellular communication at an unprecedented scale. Flexible tools are required to store, integrate and visualize the large diversity of spatial omics data. Here, we present Squidpy, a Python framework that brings together tools from omics and image analysis to enable scalable description of spatial molecular data, such as transcriptome or multivariate proteins. Squidpy provides efficient infrastructure and numerous analysis methods that allow to efficiently store, manipulate and interactively visualize spatial omics data. Squidpy is extensible and can be interfaced with a variety of already existing libraries for the scalable analysis of spatial omics data. Squidpy enables comprehensive analysis and visualization of spatial omics data and image with high efficiency.

**Keywords**

**Keywords Plus**

[TRANSCRIPTOMICSRESOLUTION](#)



## Spatial Analysis

### 2- The spatial spillover effect and nonlinear relationship analysis between environmental decentralization, government corruption and air pollution: Evidence from China

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(provided by Clarivate)

**Volume**

763

**Article Number**

144183

**DOI**

10.1016/j.scitotenv.2020.144183

**Published**

APR 1 2021

**Indexed**

2021-02-10

**Document Type**

Article

**Abstract**

The massive development of the Chinese economy is being hindered by the deteriorating air pollution problem. Many methods have been used by the Chinese government to solve this environmental dilemma, out of which environmental decentralization is one of the important measures. The transparency of environmental decentralization may be weakened by the existence of the corruption problem, resulting in further deterioration of the air pollution problem. To examine this problem, the provincial panel data of 30 provinces in China from 2005 to 2016 is selected and the spatial measurement method is used to study the relationship between environmental decentralization, government corruption, and air pollution. The results indicate that air pollution in different provinces of China is spatially dependent. Local environmental decentralization has a significant inhibitory effect on air pollution, while local air pollution is not inhibited by neighbor's environmental decentralization. However, air quality is significantly deteriorated by local or neighbor's corruption problem. After adding the interaction item of environmental decentralization and government corruption as the adjusting variable, it is found that the inhibitory effect of local environmental decentralization on air pollution is weakened by the problem of local government corruption, while the government corruption of neighbor does not have this effect. In addition, both local and neighbor's environmental decentralization have heterogeneous effects on air pollution from the spatial dynamic threshold regression results with regional corruption as the threshold variable. (C) 2020 Elsevier B.V. All rights reserved.

**Keywords**



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### Author Keywords

[Environmental decentralization](#)[Corruption](#)[Air pollution](#)[Spatial econometric model](#)[Spatial dynamic threshold regression](#)

### Keywords Plus

[FISCAL DECENTRALIZATION](#)[MARKET-SEGMENTATION](#)[ENERGY-CONSUMPTION](#)[IMPACT](#)[PERFORMANCE](#)[COMPETITION](#)[POLICIES](#)[INNOVATION](#)[EMISSIONS](#)[STRATEGY](#)