

地学新书资源推介

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1、《地学新书资源推介》立足“围绕国家重大需求和地质调查中心工作，充分发挥地学文献服务支撑作用”的目标任务，瞄准地调局业务布局中的科技需求，调研国内外地学文献资源动态，努力采集最新最全的国内外地学文献资源，为广地质工作者和科研人员提供文献资源资讯。

2、本推介为“地学文献信息更新与服务”二级项目成果之一，每年根据需求不定期发布。

3、为更好服务于地调局碳中和地质解决方案的实施，文献中心编制碳专项系列文献目录专辑。本次专辑收集整理了 Web of Science 核心合集收录的近 2 年内发表且在近 2 个月内被引次数排在相应学科领域全球前 1% 以内的碳中和相关的 13 篇热点论文。

4、论文按被引次数排序，并附 PDF 全文。



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文献资源室

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1.Global Carbon Budget 2019

作者： Friedlingstein, Pierre; Jones, Matthew W.; O'Sullivan, Michael; 等.

来源： Earth System Science Data 2019 年 11 卷第 4 期: 1783-1838 页

被引频次： 236

摘要： Accurate assessment of anthropogenic carbon dioxide (CO₂) emissions and their redistribution among the atmosphere, ocean, and terrestrial biosphere - the "global carbon budget" - is important to better understand the global carbon cycle, support the development of climate policies, and project future climate change. Here we describe data sets and methodology to quantify the five major components of the global carbon budget and their uncertainties. Fossil CO₂ emissions (E-FF) are based on energy statistics and cement production data, while emissions from land use change (E-LUC), mainly deforestation, are based on land use and land use change data and bookkeeping models. Atmospheric CO₂ concentration is measured directly and its growth rate (G(ATM)) is computed from the annual changes in concentration. The ocean CO₂ sink (S-OCEAN) and terrestrial CO₂ sink (S-LAND) are estimated with global process models constrained by observations. The resulting carbon budget imbalance (B-IM), the difference between the estimated total emissions and the estimated changes in the atmosphere, ocean, and terrestrial biosphere, is a measure of imperfect data and understanding of the contemporary carbon cycle. All uncertainties are reported as +/- 1 sigma. For the last decade available (2009-2018), E-FF was 9.5 +/- 0.5 GtC yr⁻¹, E-LUC 1.5 +/- 0.7 GtC yr⁻¹, G(ATM) 4.9 +/- 0.02 GtC yr⁻¹ (2.3 +/- 0.01 ppm yr⁻¹), S-OCEAN 2.5 +/- 0.6 GtC yr⁻¹, and S-LAND 3.2 +/- 0.6 GtC yr⁻¹, with a budget imbalance B-IM of 0.4 GtC yr⁻¹ indicating overestimated emissions and/or underestimated sinks. For the year 2018 alone, the growth in E-FF was about 2.1% and fossil emissions increased to 10.0 +/- 0.5 GtC yr⁻¹, reaching 10 GtC yr⁻¹ for the first time in history, E-LUC was 1.5 +/- 0.7 GtC yr⁻¹, for total anthropogenic CO₂ emissions of 11.5 +/- 0.9 GtC yr⁻¹ (42.5 +/- 3.3 GtCO₂). Also for 2018, G(ATM) was 5.1 +/- 0.2 GtC yr⁻¹ (2.4 +/- 0.1 ppm yr⁻¹), S-OCEAN was 2.6 +/- 0.6 GtC yr⁻¹, and S-LAND was 3.5 +/- 0.7 GtC yr⁻¹, with a B-IM of 0.3 GtC. The global atmospheric CO₂ concentration reached 407.38 +/- 0.1 ppm averaged over 2018. For 2019, preliminary data for the first 6-10 months indicate a reduced growth in E-FF of +0.6% (range of -0.2% to 1.5 %) based on national emissions projections for China, the USA, the EU, and India and projections of gross domestic product corrected for recent changes in the carbon intensity of the economy for the rest of the world. Overall, the mean and trend in the five components of the global carbon budget are consistently estimated over the period 1959-2018, but discrepancies of up to 1 GtC yr⁻¹ persist for the representation of semi-decadal variability in CO₂ fluxes.

A detailed comparison among individual estimates and the introduction of a broad range of observations shows (1) no consensus in the mean and trend in land use change emissions over the last decade, (2) a persistent low agreement between the different methods on the magnitude of the land CO₂ flux in the northern extra-tropics, and (3) an apparent underestimation of the CO₂ variability by ocean models outside the tropics. This living data update documents changes in the methods and data sets used in this new global carbon budget and the progress in understanding of the global carbon cycle compared with previous publications of this data set.

2.A review of the current progress of CO₂ injection EOR and carbon storage in shale oil reservoirs

作者： Jia, Bao; Tsau, Jyun-Syung; Barati, Reza

来源： Fuel 2019 年 236 卷: 404-427 页

被引频次： 151

摘要： CO₂ injection is a promising method to rejuvenate the shale oil reservoirs after the primary production. In this work, we comprehensively reviewed the CO₂ injection enhanced oil recovery (EOR) and carbon storage related literature in shales over the past decade. The aspects reviewed include description of major shale reservoirs producing oil and the necessity to perform EOR, selection of injection scheme, models applied to simulate gas injection, oil recovery mechanisms for different types of gas, molecular diffusion and its laboratory measurement, nanopore effect, adsorption effect on carbon storage and transport, laboratory work of gas injection in shale cores, pilot tests, and economic evaluation. Advanced models in recent years applied to simulate these processes were introduced in details, such as the traditional dual continuum model, the embedded discrete fracture model (EDFM). Heterogeneity effect and upscaling algorithm on the shale oil recovery performance were discussed. Molecular diffusion, as an important flow and oil recovery mechanism, was described regarding its definition, empirical correlation and laboratory measurement with consideration of the porous media effect which is crucial for accurate modeling result. Recovery mechanisms by carbon dioxide, methane and nitrogen were compared at the molecule and pore levels. Pros and cons of different types of gas were evaluated as well. Pore confinement caused by the extremely tiny pores in the organic matter, along with the capillary and adsorption effects were discussed, and approaches to take them into account of the model were addressed. Corescale gas injection experiments on shales from various institutions were described, and the results were compared. Outcomes of recent pilot tests in the Eagle Ford, and the Bakken formations were summarized, and finally, economic considerations were provided for the feasibility of gas injection in shale oil reservoirs.

3.The technological and economic prospects for CO₂ utilization and removal

作者： Hepburn, Cameron; Adlen, Ella; Beddington, John; 等.

来源： Nature 2019 年 575 卷 7781 期： 87-97 页

被引频次： 107

摘要： The capture and use of carbon dioxide to create valuable products might lower the net costs of reducing emissions or removing carbon dioxide from the atmosphere. Here we review ten pathways for the utilization of carbon dioxide. Pathways that involve chemicals, fuels and microalgae might reduce emissions of carbon dioxide but have limited potential for its removal, whereas pathways that involve construction materials can both utilize and remove carbon dioxide. Land-based pathways can increase agricultural output and remove carbon dioxide. Our assessment suggests that each pathway could scale to over 0.5 gigatonnes of carbon dioxide utilization annually. However, barriers to implementation remain substantial and resource constraints prevent the simultaneous deployment of all pathways.

4.Dynamic linkages between globalization, financial development and carbon emissions: Evidence from Asia Pacific Economic Cooperation countries

作者: Zaidi, Syed Anees Haider; Zafar, Muhammad Wasif; Shahbaz, Muhammad; 等.

来源: Journal of Cleaner Production 2019 年 228 卷: 533-543

被引频次: 9

摘要: This study determines the dynamic linkages between globalization, financial development and carbon emissions in Asia Pacific Economic Cooperation (APEC) countries in the presence of energy intensity and economic growth under the framework of Environment Kuznets Curve (EKC). This study employs the panel data from 1990 to 2016, Westerlund cointegration technique to find long-run cointegration, and Continuously Updated Bias-Corrected (CUP-BC) and Continuously Updated Fully Modified (CUP-FM) methods to check the long-run elasticities between the variables. Empirical results indicate that globalization and financial development significantly reduce carbon emissions, but economic growth and energy intensity increase them. These results support the EKC hypothesis for APEC countries. The Dumitrescu and Hurlin causality analysis shows that globalization Granger causes CO₂ emissions. Globalization also causes financial development and energy intensity. A feedback effect exists between financial development and CO₂ emissions. Furthermore, financial development causes economic growth but similar is not true from opposite-side in Granger sense. Finally, this study presents important policy implications with respect to APEC countries.

5.A sustainable wood biorefinery for low-carbon footprint chemicals production

作者: Liao, Yuhe; Koelewijn, Steven-Friso; Van den Bossche, Gil; 等.

来源: Science 2020 年 367 卷 6484 期 (SI): 1385-1390 页

被引频次: 75

摘要: The profitability and sustainability of future biorefineries are dependent on efficient feedstock use. Therefore, it is essential to valorize lignin when using wood. We have developed an integrated biorefinery that converts 78 weight % (wt %) of birch into xylochemicals. Reductive catalytic fractionation of the wood produces a carbohydrate pulp amenable to bioethanol production and a lignin oil. After extraction of the lignin oil, the crude, unseparated mixture of phenolic monomers is catalytically funneled into 20 wt % of phenol and 9 wt % of propylene (on the basis of lignin weight) by gas-phase hydroprocessing and dealkylation; the residual phenolic oligomers (30 wt %) are used in printing ink as replacements for controversial para-nonylphenol. A techno-economic analysis predicts an economically competitive production process, and a life-cycle assessment estimates a lower carbon dioxide footprint relative to that of fossil-based production.

6.Regional development and carbon emissions in China

作者：Zheng, Jiali; Mi, Zhifu; Coffman, D'Maris; 等.

来源：Energy Economics 2019年81卷：25-36页

被引频次：60

摘要：China announced at the Paris Climate Change Conference in 2015 that the country would reach peak carbon emissions around 2030. Since then, widespread attention has been devoted to determining when and how this goal will be achieved. This study aims to explore the role of China's changing regional development patterns in the achievement of this goal. This study uses the logarithmic mean Divisia index (LMDI) to estimate seven socioeconomic drivers of the changes in CO₂ emissions in China since 2000. The results show that China's carbon emissions have plateaued since 2012 mainly because of energy efficiency gains and structural upgrades (i.e., industrial structure, energy mix and regional structure). Regional structure, measured by provincial economic growth shares, has drastically reduced CO₂ emissions since 2012. The effects of these drivers on emissions changes varied across regions due to their different regional development patterns. Industrial structure and energy mix resulted in emissions growth in some regions, but these two drivers led to emissions reduction at the national level. For example, industrial structure reduced China's CO₂ emissions by 1.0% from 2013 to 2016; however, it increased CO₂ emissions in the Northeast and Northwest regions by 1.7% and 0.9%, respectively. Studying China's plateauing CO₂ emissions in the new normal stage at the regional level yields a strong recommendation that China's regions cooperate to improve development patterns.

7.Does renewable energy consumption and health expenditures decrease carbon dioxide emissions? Evidence for sub-Saharan Africa countries

作者：Apergis, Nicholas; Ben Jebli, Mehdi; Ben Youssef, Slim

来源：Renewable Energy 卷: 127 页: 1011-1016 出版年: NOV 2018

被引频次: 53

摘要：This paper employs panel methodological approaches to explore the link between per capita carbon dioxide (CO₂) emissions, per capita real gross domestic product (GDP), renewable energy consumption, and health expenditures as health indicator for a panel of 42 sub-Saharan Africa countries, spanning the period 1995-2011. Empirical results support a long term relationship between variables. In the short-run, Granger causality reveals the presence of unidirectional causalities running from real GDP to CO₂ emissions, to renewable energy consumption, and to health expenditures, and bidirectional causality between renewable energy consumption and CO₂ emissions. In the long-run, there is a unidirectional causality running from renewable energy consumption to health expenditures, and bidirectional causality between health expenditures and CO₂ emissions. Our long-run elasticity estimates document that both renewable energy consumption and health expenditures contribute to the reduction of carbon emissions, while real GDP leads to the increase of emissions. We recommend these countries to pursue their economic growth and invest in health care and renewable energy projects, which will enable them to benefit from their abundant wealth in renewable energy resources, improve the health conditions of their citizens, and fight climate change.

8.Resource abundance, industrial structure, and regional carbon emissions efficiency in China

作者: Wang, Keying; Wu, Meng; Sun, Yongping; 等.

来源: Resources Policy 2019年60卷: 203-214页

被引频次: 49

摘要: With increasing concerns over climate change and the global consensus regarding low carbon growth, the transition of resource-based regions has become urgent and challenging. We employ a Slacks-Based Measure with windows analysis approach to estimate the carbon emissions efficiency and abatement potential of China's provinces over the period of 2003-2016. A panel Tobit model is further employed to analyze the direct and indirect effects of natural resource abundance on emissions efficiency. We find that: (1) There exists a negative correlation between resource abundance and carbon emissions efficiency. The more abundant the resources, the lower the emissions efficiency. (2) Although emissions efficiency and abatement potential are generally negatively correlated, abatement potential also depends on the scale of the economy. (3) Resource dependence is unfavourable for the rationalization and advancement of the industrial structure, which indirectly affects the carbon emissions efficiency. These findings imply that resource-based regions should make the improvement of emissions efficiency and the exploration of abatement potential as their top priority of actions for a low-carbon transition, and promote the transformation of industrial structure in order to obtain a double dividend in sustainable development and carbon emissions efficiency.

9.A novel conformable fractional non-homogeneous grey model for forecasting carbon dioxide emissions of BRICS countries

作者: Wu, Wenqing; Ma, Xin; Zhang, Yuanyuan; 等.

来源: Science of the Total Environment 2020年707卷(文献号: 135447)

被引频次: 38

摘要: Nowadays, climate change is one of the most important global issues to the international community. And nearly thirty kinds of greenhouse gases have been found in the atmosphere, of which the carbon dioxide plays a crucial role. In this paper, the carbon dioxide emissions of BRICS (Brazil, Russia, India, China and South Africa) countries are investigated by using a conformable fractional non-homogeneous grey model. The grey model is systematically studied based on the new definitions of the conformable fractional accumulation and difference. The closed-form solutions of the new model are derived by applying mathematical tools and grey theory. And the meta-heuristic algorithm ant lion optimizer is adopted to search optimal fractional order. With raw data during the period from 2000 to 2018 announced by British Petroleum, the new model is established to forecast the carbon dioxide emissions of BRICS nations from 2019 to 2025. The results show that the trend of the carbon dioxide emissions of Brazil and India is growing year by year, the pattern of Russia is fluctuant but remains stable generally, while China and South Africa reach its peak value in 2019, and then decrease in the next several years.

10. Implications of various effort-sharing approaches for national carbon budgets and emission pathways

作者： van den Berg, Nicole J.; van Soest, Heleen L.; Hof, Andries F.; 等.

来源： Climatic Change 2020 年 162 卷第 4 期（SI）： 1805-1822 页

被引频次: 25

摘要： The bottom-up approach of the Nationally Determined Contributions (NDCs) in the Paris Agreement has led countries to self-determine their greenhouse gas (GHG) emission reduction targets. The planned 'ratcheting-up' process, which aims to ensure that the NDCs comply with the overall goal of limiting global average temperature increase to well below 2 degrees C or even 1.5 degrees C, will most likely include some evaluation of 'fairness' of these reduction targets. In the literature, fairness has been discussed around equity principles, for which many different effort-sharing approaches have been proposed. In this research, we analysed how country-level emission targets and carbon budgets can be derived based on such criteria. We apply novel methods directly based on the global carbon budget, and, for comparison, more commonly used methods using GHG mitigation pathways. For both, we studied the following approaches: equal cumulative per capita emissions, contraction and convergence, grandfathering, greenhouse development rights and ability to pay. As the results critically depend on parameter settings, we used the wide authorship from a range of countries included in this paper to determine default settings and sensitivity analyses. Results show that effort-sharing approaches that (i) calculate required reduction targets in carbon budgets (relative to baseline budgets) and/or (ii) take into account historical emissions when determining carbon budgets can lead to (large) negative remaining carbon budgets for developed countries. This is the case for the equal cumulative per capita approach and especially the greenhouse development rights approach.

11. Analyzing carbon emission transfer network structure among provinces in China: new evidence from social network analysis

作者： Sun, Licheng; Qin, Lin; Taghizadeh-Hesary, Farhad; 等.

来源： Environmental Science and Pollution Research 2020 年 27 卷第 18 期： 23281-23300 页

被引频次: 24

摘要： Domestic trade plays a key role in China's rapid economic progress. However, the increased domestic trade causes significant variations in carbon emission transfer among provinces. This study adopted the multi-region input-output (MRIO) model and social network analysis (SNA) to estimate the carbon emission transfer. Furthermore, the carbon emission transfer network characteristics among 30 provinces and 27 sectors were analyzed by using interprovincial input-output tables for 2007, 2010, and 2012. The results showed that (1) Large differences exist in carbon emission transfer flow and its network characteristics between provinces. (2) The three industrial sectors of metal smelting and pressing sector, power, heat production, and supply sector, petroleum processing, coking, and nuclear fuel processing sector have high carbon emission transfer and pose a strong influence on the carbon emission transfer network. (3) Provinces of the eastern region have a "bidirectional spillover" role, while those of the western region have a mediating role as an "agent." Provinces of the central region have a "main inflow" role.

12. Decision Optimization of Low-Carbon Dual-Channel Supply Chain of Auto Parts Based on Smart City Architecture

作者: Liu, Zheng; Hu, Bin; Huang, Bangtong; 等.

来源: Complexity 2020年2020卷(文献号: 2145951)

被引频次: 20

摘要: The smart city has always regarded green and low-carbon development as one of the goals, and the carbon emissions of the auto parts industry cannot be ignored, so we should carry out energy conservation and emission reduction. With the rapid development of the domestic auto parts industry, the number of car ownership has increased dramatically, producing more and more CO₂ and waste. Facing the pressure of resources, energy, and environment, the effective and circular operation of the auto parts supply chain under the low-carbon transformation is not only a great challenge, but also a development opportunity. Under the background of carbon emission, this paper establishes a decision-making optimization model of the low-carbon supply chain of auto parts based on carbon emission responsibility sharing and resource sharing. This paper analyzes the optimal decision-making behavior and interaction of suppliers, producers, physical retailers, online retailers, demand markets, and recyclers in the auto parts industry, constructs the economic and environmental objective functions of low-carbon supply chain management, applies variational inequality to analyze the optimal conditions of the whole low-carbon supply chain system, and finally carries out simulation calculation. The research shows that the upstream and downstream auto parts enterprises based on low-carbon competition and cooperation can effectively manage the carbon footprint of the whole supply chain through the sharing of responsibilities and resources among enterprises, so as to reduce the overall carbon emissions of the supply chain system.

13. Carbon emission transfer strategies in supply chain with lag time of emission reduction technologies and low-carbon preference of consumers

作者: Sun, Licheng; Cao, Xiaoxiao; Alharthi, Majed; 等.

来源: Journal of Cleaner Production 2020年264卷(文献号: 121664)

被引频次: 16

摘要: To better promote supply chain emission reduction, this paper analyzes the carbon emission transfer and emission reduction problem among enterprises within the supply chain, integrating the influence of government emission reduction policies and the low carbon market. Considering the lag time of emission reduction technologies and the low-carbon preferences of consumers, a Stackelberg differential game model (dominated by manufacturers) is constructed under both centralized and decentralized decisions. The results suggest that the lag time of emission reduction technology and the low carbon preference of consumers positively affect the carbon emission transfer level of manufacturers, while not affecting suppliers' undertaking levels. Only when the lag time of emission reduction technology remains within a specific range, will an increase in consumers' low-carbon preferences exert a positive impact on supply chain profits.