

**Point-by-point responses (in blue) to the Editor and Reviewers' comments:**

Manuscript No.: cp-2024-42

**Reviewer #2:**

1. Line 34: published

Thanks and done.

2. Line 35: P

Thanks and done.

3. Line 52: Orbital periods

Thanks and done.

4. Line 52: Whether

Thanks and done.

5. Line 124: provide a better understanding

Thanks and done.

6. Line 128: maceral composition

Thanks and done.

7. Line 129: Vitrinite reflectance

Thanks and done.

8. Line 133: by

Thanks and done.

9. Line 135: and

Thanks and done.

10. Line 143: also

[Thanks and done.](#)

11. Line 145: unreliable

[Thanks and done.](#)

12. Line 150: two

[Thanks and done.](#)

13. Line 151: also

[Thanks and done.](#)

14. Line 168: Coal maceral data, reported on a mineral matter free basis (mmf),

[Thanks and done.](#)

15. Line 169: Vitrinite

[Thanks and done.](#)

16. Line 169: in all samples

[Thanks and done.](#)

17. Line 171: Liptinite contents were low

[Thanks and done.](#)

18. Line 175: (Table 1)

[Thanks and done.](#)

19. Line 175: The

[Thanks and done.](#)

20. Line 176: and

Thanks and done.

21. Line 180: VRo

Thanks and done.

22. Line 187: coefficient

Thanks and done.

23. Line 187: I would not consider correlation coefficient of 0.529 to be "highly" significant.

Thanks for your suggestions. We have removed the description of 'highly'.

24. Line 188: a

Thanks and done.

25. Line 191: a

Thanks and done.

26. Line 209: images

Thanks and done.

27. Line 216: In addition,

Thanks and done.

28. Line 220: vacuoles

Thanks and done.

29. Line 227: represent

Thanks and done.

30. Line 240: represent

Thanks and done.

31. Line 243: have

Thanks and done.

32. Line 244: are likely

Thanks and done.

33. Line 247: thermally immature

Thanks and done.

34. Line 248: have

Thanks and done.

35. Line 249: at least

Thanks and done.

36. Line 253: This is actually a wide range of variability.

Thanks for your suggestion. The revisions have been completed.

37. Line 258: characteristics

Thanks and done.

38. Line 266: This is a wide range of variability

Thanks for your suggestion. The revisions have been completed.

39. Line 271: How do you know these are from fern tissues?

Thank you for your suggestion. I have added additional explanations regarding ferns and included the relevant references.

40. Line 297: does not correlate with

Thanks and done.

41. Line 320: What is a "closed" coal seam?

Thanks. It has been corrected.

42. Line 321: leaching

Thanks and done.

43. Line 325: activity

Thanks and done.

44. Line 326: emplaced

Thanks and done.

45. Line 342: influence

Thanks and done.

46. Line 353: is sensitive

Thanks and done.

47. Line 353: indicating

Thanks and done.

48. Line 354: indicating

Thanks and done.

49. Line 356: which are indicative of

Thanks and done.

50. Line 358: indicating

Thanks and done.

51. Line 360: drier

Thanks and done.

52. Line 361: and

Thanks and done.

53. Line 377: The peat literature suggests that peat accumulation events are much younger, typically between 8,000 and 10,000 years.

Thank you for your suggestion. The No. 9 coal contains multiple layers of volcanic ash formed by volcanic activity (see Fig. 1), so 1.9 Ma represents the sedimentation age including both peat and volcanic ash.

54. Line 380: Maximum

Thanks and done.

55. Line 383: with

Thanks and done.

56. Line 383: levels

Thanks and done.

57. Line 391: in reduced

Thanks and done.

58. Line 397: ,

Thanks and done.

59. Line 401: volcanoes erupt

Thanks and done.

60. Line 401: facilitate

Thanks and done.

61. Line 402: falls out on

Thanks and done.

62. Line 416: This is

Thanks and done.

63. Line 420: proliferates

Thanks and done.

64. Line 420: In

Thanks and done.

65. Line 422: frequency of

Thanks and done.

66. Line 422: is a function of

Thanks and done.

67. Line 423: Spatially,

Thanks and done.

68. Line 430: uncertain

Thanks and done.

69. Line 430: not representing the true situation at that time

Thanks and done.

70. Line: had

Thanks and done.

71. Line: of the Late Carboniferous

Thanks and done.