Table S1: Metagenomics sequencing and assembly statistics

|  |  |  |  |
| --- | --- | --- | --- |
| Sample | wet | dry | flooded |
| Raw Reads | 116,592,642 | 114,970,478 | 113,353,812 |
| Clean Reads | 96,516,358 | 96,533,736 | 95,779,654 |
| Clean bases | 12,064,544,750 | 12,066,717,000 | 11,972,456,750 |
| Avg. read length (bp) | 125 | 125 | 125 |
| Total contig number | 126,606 | 128,688 | 137,073 |
| Total contig length(bp) | 170,078,229 | 172,706,972 | 194,040,904 |
| Max contig length(bp) | 104,130 | 114,486 | 105,251 |
| Min contig length(bp) | 500 | 500 | 500 |
| Average contig(bp) | 1,343 | 1,342 | 1,415 |
| Contigs N90 | 632 | 629 | 644 |
| Contigs N50 | 1,611 | 1,607 | 1751 |
| PEreads | 2833003 | 3293989 | 3619755 |
| PE | 5.87 | 6.82 | 7.56 |
| SEreads | 8491408 | 10107275 | 9857511 |
| SE | 8.8 | 10.47 | 10.29 |
| mapping\_rate | 14.67 | 17.29 | 17.85 |

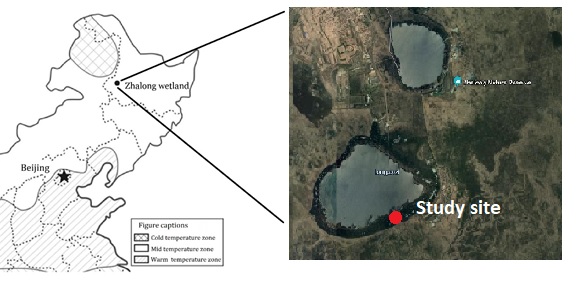
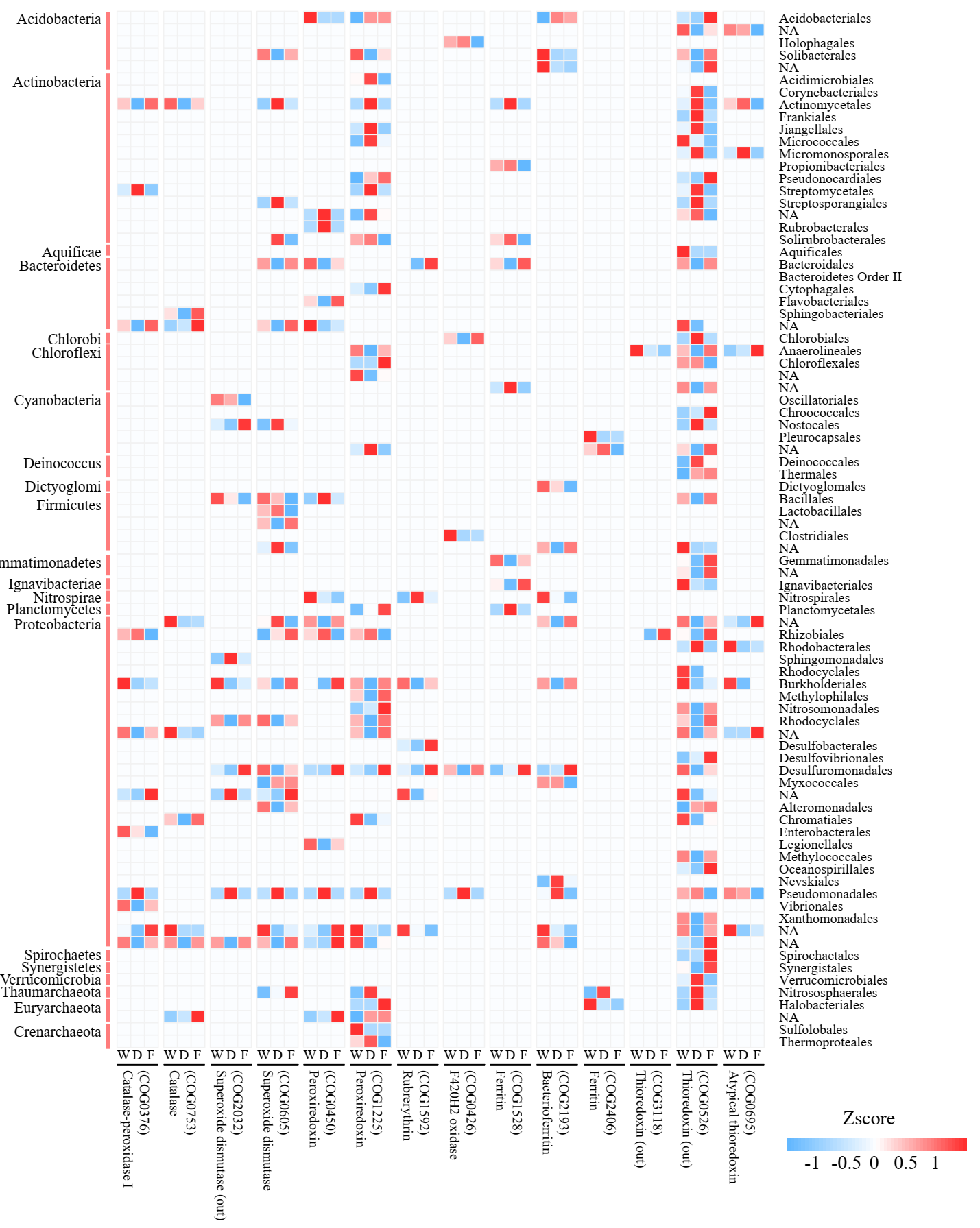


Fig. S1 Location of Zhalong wetland in northeastern China. The expanded image (Google) shows study site.



Fig. S2 Closed static chambers used at Zhalong wetland

Fig. S3. Taxonomic origins of the protein involved in anti-oxidation system during the three periods. Abbreviations: W, wet; D, dry; F, flooded.

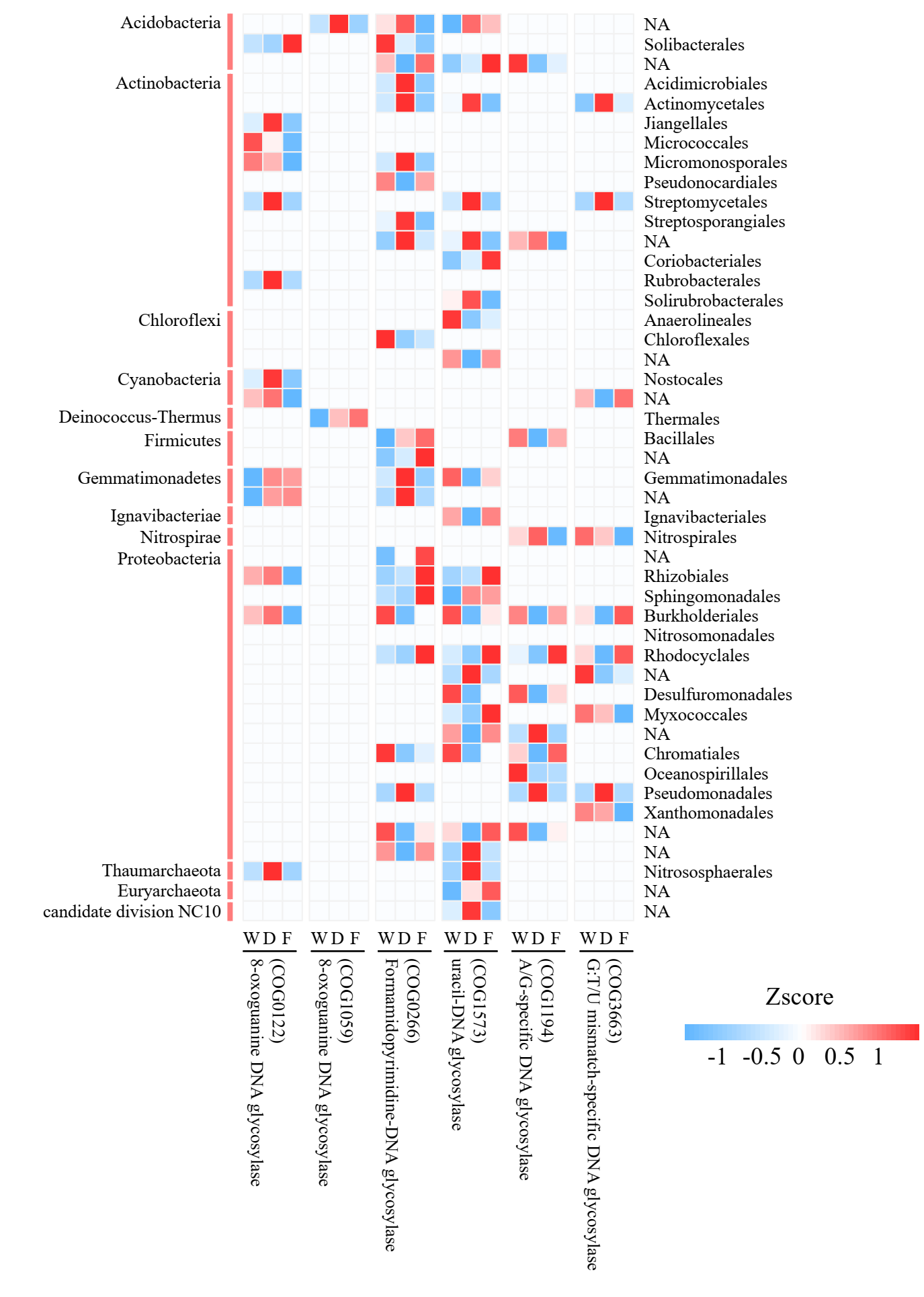


Fig. S4. Taxonomic origins of the protein involved in DNA base repair system (DNA glycolyase) during the three periods. Abbreviations: W, wet; D, dry; F, flooded.

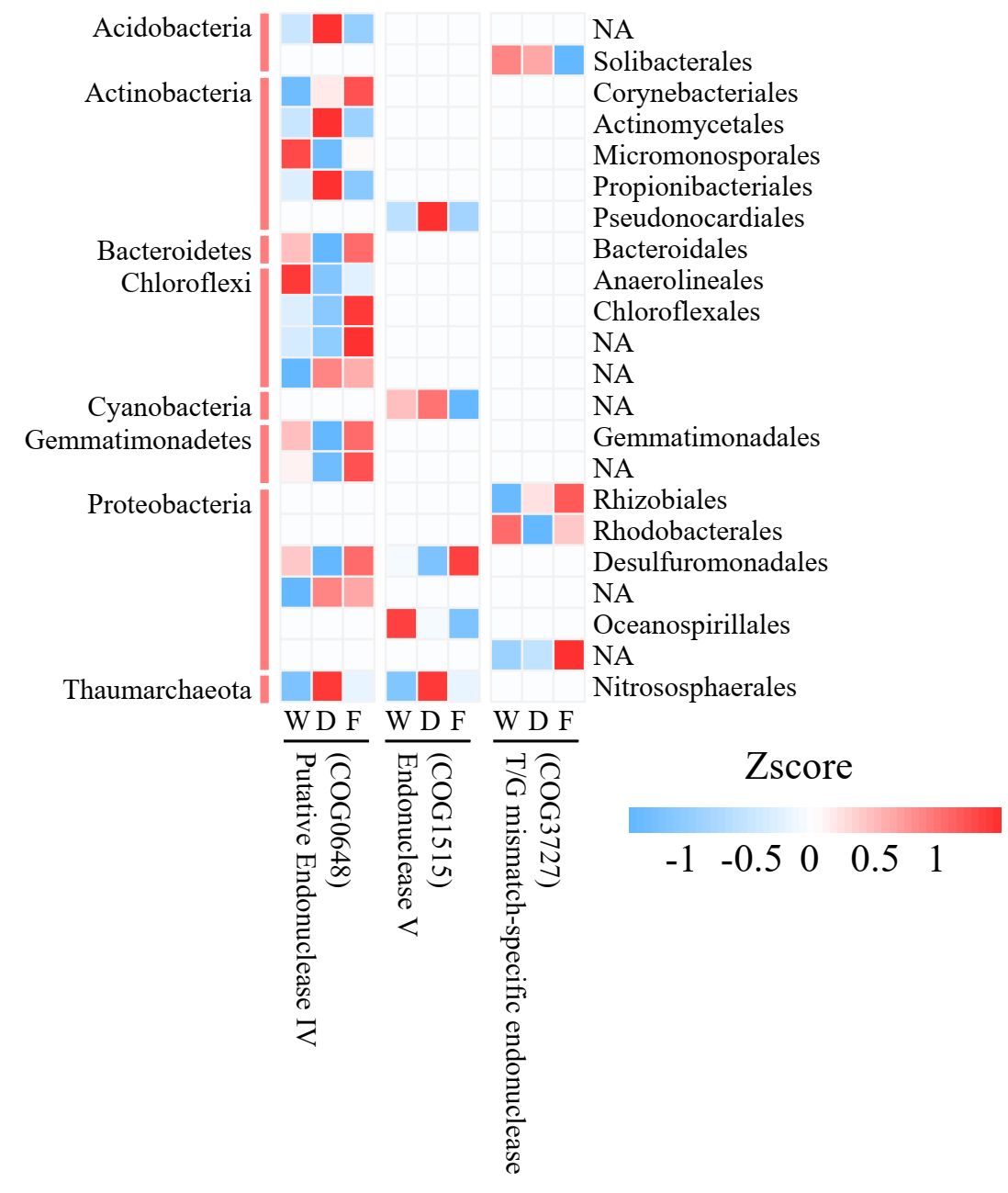


Fig. S5. Taxonomic origins of the protein involved in DNA base repair system (endonuclease) during the three periods. Abbreviations: W, wet; D, dry; F, flooded.

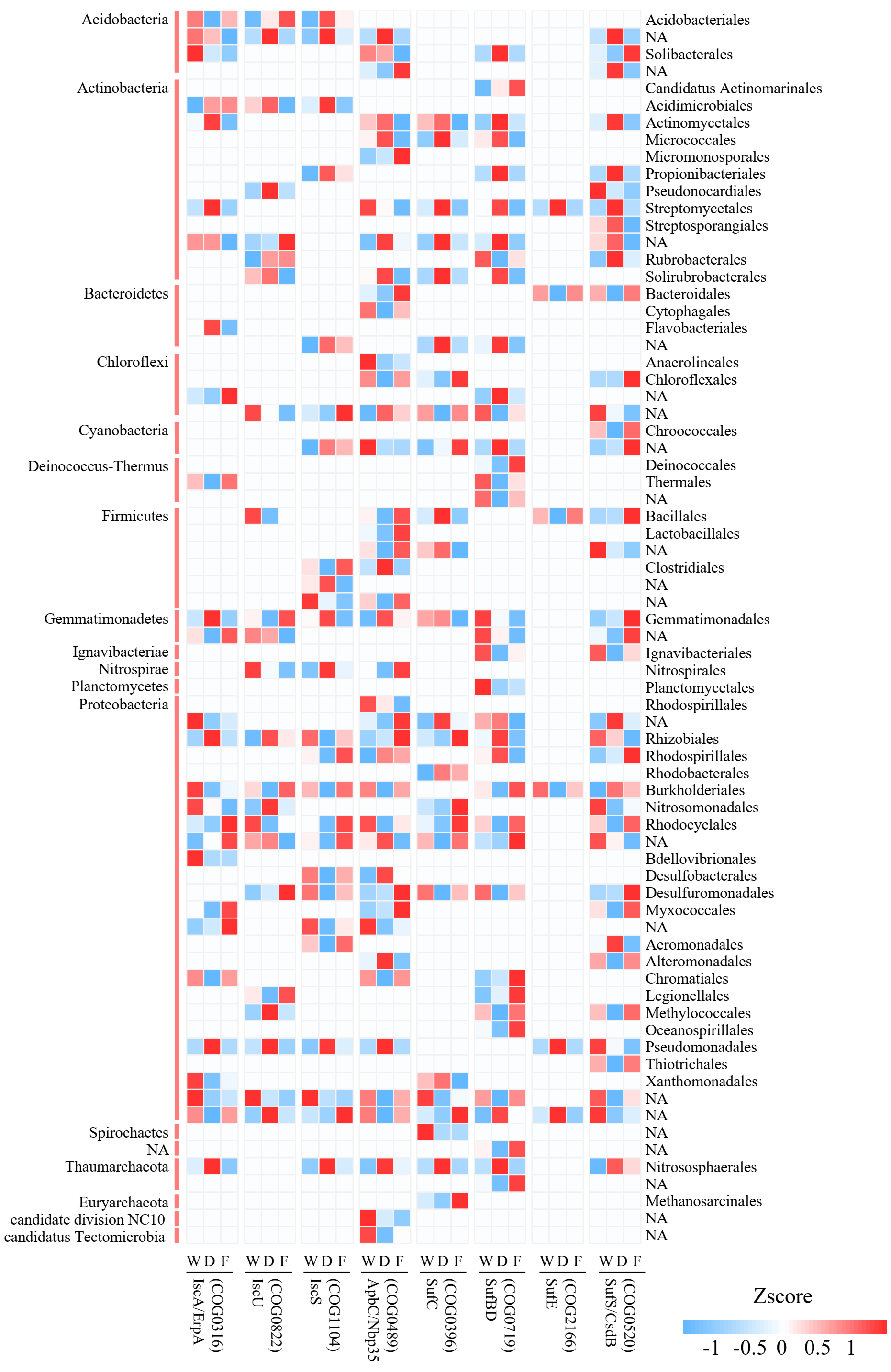
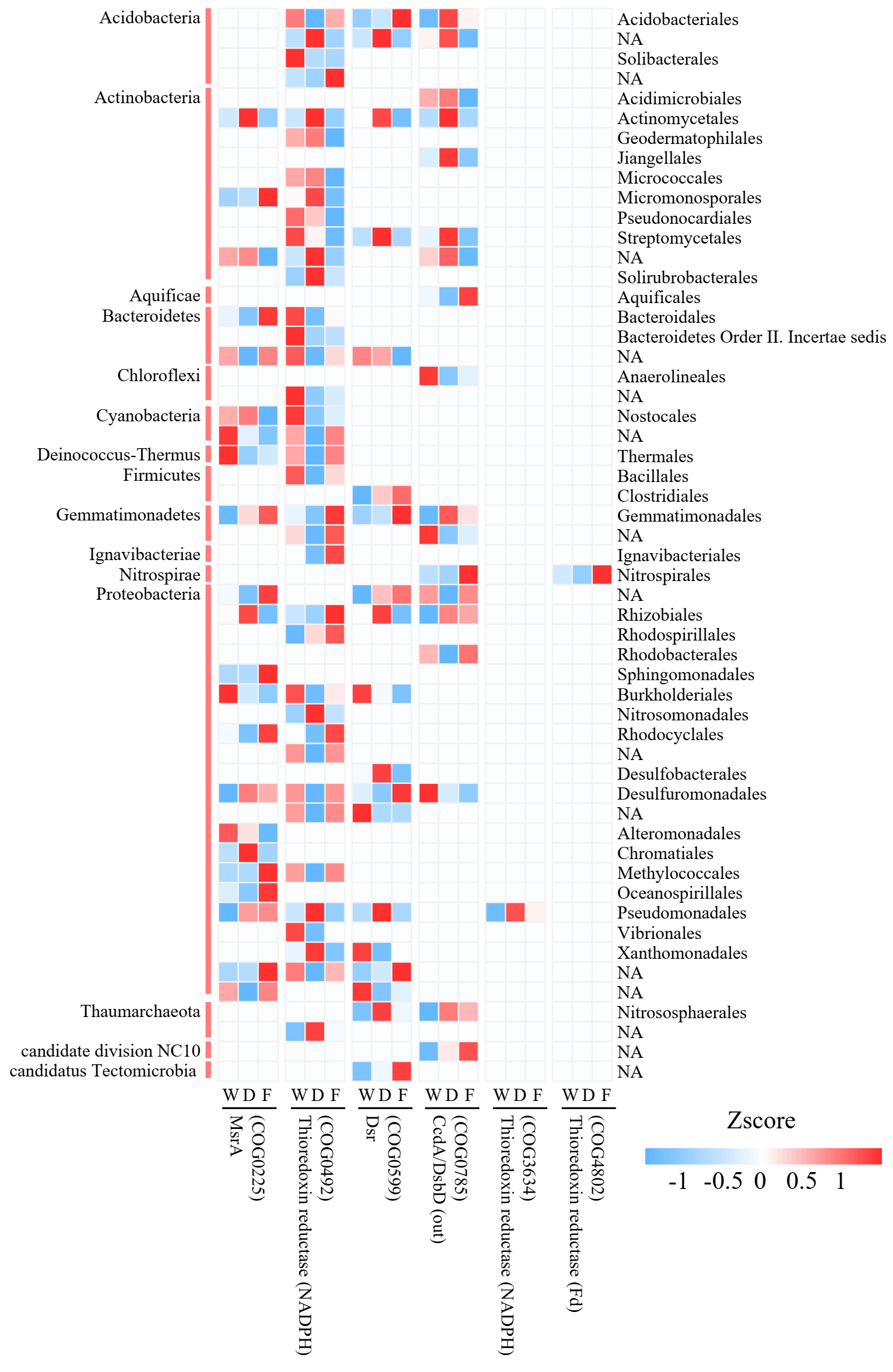
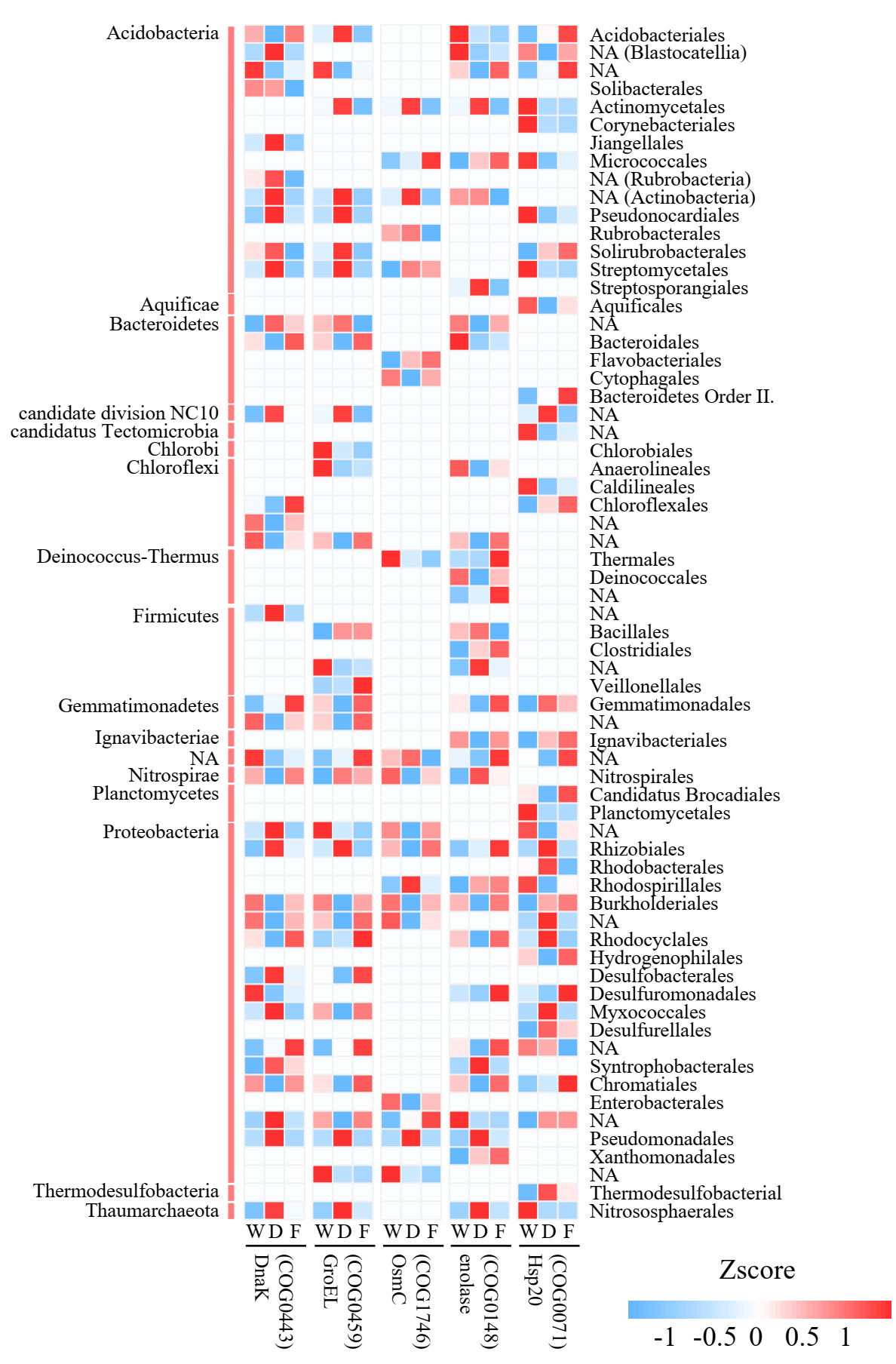
Fig. S6. Taxonomic origins of the protein involved in iron-sulfur (FeS) clusters repair system during the three periods. Abbreviations: W, wet; D, dry; F, flooded.

Fig. S7. Taxonomic origins of the protein involved in protein repair system (SS recover) during the three periods. Abbreviations: W, wet; D, dry; F, flooded.

Fig. S8. Taxonomic origins of the protein involved in VBNC system during the three periods. Abbreviations: W, wet; D, dry; F, flooded.