# Wet Deposition Characteristics of Inorganic Elements in Typical Chinese Coastal Cities

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**Table S1** Statistical data of water-soluble ion concentration in Ningbo wet deposition ($\mu eq \cdot L^{-1}$)

| Water-soluble ions | Min | | Max | | Avg | | SD | | VC (%) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | ZX | CX | ZX | CX | ZX | CX | ZX | CX | ZX | CX |
| $NH_4^+$ | 2.31 | 7.13 | 165.28 | 93.94 | 42.95 | 37.58 | 34.61 | 22.55 | 81 | 60 |
| $Na^+$ | 2.81 | 5.55 | 63.39 | 75.54 | 21.45 | 24.21 | 21.55 | 14.24 | 101 | 59 |
| $K^+$ | 1.03 | 1.04 | 37.57 | 12.15 | 6.94 | 4.78 | 8.32 | 2.84 | 119 | 59 |
| $Mg^{2+}$ | 1.41 | 2.15 | 42.34 | 57.61 | 11.97 | 9.65 | 12.58 | 10.11 | 105 | 104 |
| $Ca^{2+}$ | 2.81 | 4.48 | 175.49 | 116.47 | 45.72 | 32.33 | 50.13 | 26.86 | 109 | 83 |
| $SO_4^{2-}$ | 11.58 | 10.21 | 262.61 | 196.73 | 68.02 | 58.76 | 54.67 | 21.37 | 81 | 55 |
| $NO_3^-$ | 7.48 | 10.55 | 283.25 | 101.16 | 60.67 | 41.09 | 59.77 | 27.81 | 98 | 67 |
| $Cl^-$ | 8.38 | 3.98 | 135.23 | 219.38 | 29.73 | 36.51 | 23.08 | 55.77 | 77 | 83 |
| F- | 1.01 | 0.50 | 18.97 | 12.52 | 5.43 | 3.31 | 4.93 | 3.04 | 91 | 91 |

**Table S2** Statistical data of water-soluble ion concentration in Guangzhou wet deposition (μeq·$L^{-1}$)

| Water-soluble ions | Min | | Max | | Avg | | SD | | VC (%) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | GIG | WQS | GIG | WQS | GIG | WQS | GIG | WQS | GIG | WQS |
| $NH_4^+$ | 31.99 | 30.97 | 504.29 | 363.14 | 102.39 | 100.28 | 131.65 | 78.45 | 86 | 78 |
| $Na^+$ | 2.97 | 4.49 | 77.64 | 127.34 | 27.35 | 36.61 | 20.74 | 31.65 | 75 | 86 |
| $K^+$ | 0.59 | 0.81 | 9.31 | 10.29 | 4.31 | 4.23 | 2.71 | 2.52 | 62 | 59 |
| $Mg^{2+}$ | 2.68 | 3.06 | 53.59 | 71.91 | 15.73 | 19.93 | 12.17 | 17.02 | 77 | 85 |
| $Ca^{2+}$ | 21.57 | 21.08 | 267.13 | 412.43 | 86.53 | 90.31 | 71.29 | 82.06 | 82 | 90 |
| $SO_4^{2-}$ | 24.71 | 32.61 | 302.13 | 261.16 | 117.03 | 102.64 | 86.92 | 62.04 | 74 | 60 |
| $NO_3^-$ | 14.23 | 17.94 | 345.04 | 429.58 | 107.67 | 89.42 | 95.59 | 96.01 | 88 | 107 |
| $Cl^-$ | 5.64 | 5.52 | 106.06 | 166.27 | 36.52 | 49.67 | 26.91 | 40.25 | 73 | 81 |
| F- | 0.37 | 0.42 | 13.69 | 21.19 | 5.04 | 5.16 | 3.75 | 5.29 | 74 | 102 |

**Table S3** Correlation analysis of water-soluble ions in rainfall at ZX station and CX sites in Ningbo

| | $NH_4^+$ | $Na^+$ | $K^+$ | $Mg^{2+}$ | $Ca^{2+}$ | $SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | F- |
|---|---|---|---|---|---|---|---|---|---|
| **ZX** | | | | | | | | | |
| $NH_4^+$ | 1 | | | | | | | | |
| $Na^+$ | 0.83** | | | | | | | | |
| $K^+$ | 0.88** | 0.67** | | | | | | | |
| $Mg^{2+}$ | 0.68** | 0.48* | 0.58** | | | | | | |
| $Ca^{2+}$ | 0.66** | 0.45* | 0.55** | 0.96** | | | | | |
| $SO_4^{2-}$ | 0.73** | 0.52** | 0.61** | 0.93** | 0.91** | | | | |
| $NO_3^-$ | 0.61** | 0.46* | 0.58** | 0.81** | 0.79** | 0.89** | | | |
| $Cl^-$ | 0.66** | 0.57** | 0.66** | 0.61** | 0.58** | 0.64** | 0.68** | | |
| F- | 0.75** | 0.53** | 0.54** | 0.76** | 0.72** | 0.81** | 0.66** | 0.54** | 1 |
| **CX** | | | | | | | | | |
| $NH_4^+$ | 1 | | | | | | | | |
| $Na^+$ | 0.45* | | | | | | | | |
| $K^+$ | 0.79** | 0.72** | | | | | | | |
| $Mg^{2+}$ | 0.67** | 0.92** | 0.88** | | | | | | |
| $Ca^{2+}$ | 0.66** | 0.85** | 0.76** | 0.94** | 1 | | | | |
| $SO_4^{2-}$ | 0.89** | 0.69** | 0.84** | 0.85** | 0.86** | 1 | | | |
| $NO_3^-$ | 0.86** | 0.62** | 0.77** | 0.78** | 0.76** | 0.84** | 1 | | |
| $Cl^-$ | 0.71** | 0.89** | 0.73** | 0.91** | 0.91** | 0.85** | 0.84** | 1 | |
| F- | 0.89** | 0.46* | 0.74** | 0.71** | 0.77** | 0.89** | 0.84** | 0.71** | 1 |

* = $P < 0.05$, ** = $P < 0.01$

**Table S4** Correlation analysis of water-soluble ions in rainfall at GIG station and WQS sites in Guangzhou

| | $NH_4^+$ | $Na^+$ | $K^+$ | $Mg^{2+}$ | $Ca^{2+}$ | $SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | F- |
|---|---|---|---|---|---|---|---|---|---|
| **GIG** | | | | | | | | | |
| $NH_4^+$ | 1 | | | | | | | | |
| $Na^+$ | 0.75** | 1 | | | | | | | |
| $K^+$ | 0.68** | 0.62** | 1 | | | | | | |
| $Mg^{2+}$ | 0.84** | 0.91** | 0.63** | 1 | | | | | |
| $Ca^{2+}$ | 0.88** | 0.77** | 0.64** | 0.87** | 1 | | | | |
| $SO_4^{2-}$ | 0.95** | 0.71** | 0.72** | 0.81** | 0.83** | 1 | | | |
| $NO_3^-$ | 0.95** | 0.69** | 0.66** | 0.81** | 0.87** | 0.96** | 1 | | |
| $Cl^-$ | 0.85** | 0.93** | 0.66** | 0.84** | 0.80** | 0.81** | 0.80** | 1 | |
| F- | 0.61** | 0.43* | 0.66** | 0.56** | 0.58** | 0.72** | 0.60** | 0.44* | 1 |
| **WQS** | | | | | | | | | |
| $NH_4^+$ | 1 | | | | | | | | |
| $Na^+$ | 0.52** | 1 | | | | | | | |
| $K^+$ | 0.48* | 0.67** | 1 | | | | | | |
| $Mg^{2+}$ | 0.61** | 0.67** | 0.83** | 1 | | | | | |
| $Ca^{2+}$ | 0.51* | 0.88** | 0.66** | 0.91** | 1 | | | | |
| $SO_4^{2-}$ | 0.88** | 0.77* | 0.85** | 0.76** | 0.76** | 1 | | | |
| $NO_3^-$ | 0.67** | 0.49* | 0.78** | 0.69** | 0.66** | 0.77** | 1 | | |
| $Cl^-$ | 0.67** | 0.96** | 0.59** | 0.80** | 0.46* | 0.62** | 0.61** | 1 | |
| F- | 0.78** | 0.41* | 0.66** | 0.66** | 0.68** | 0.61** | 0.68** | 0.58** | 1 |

* = $P < 0.05$, ** = $P < 0.01$

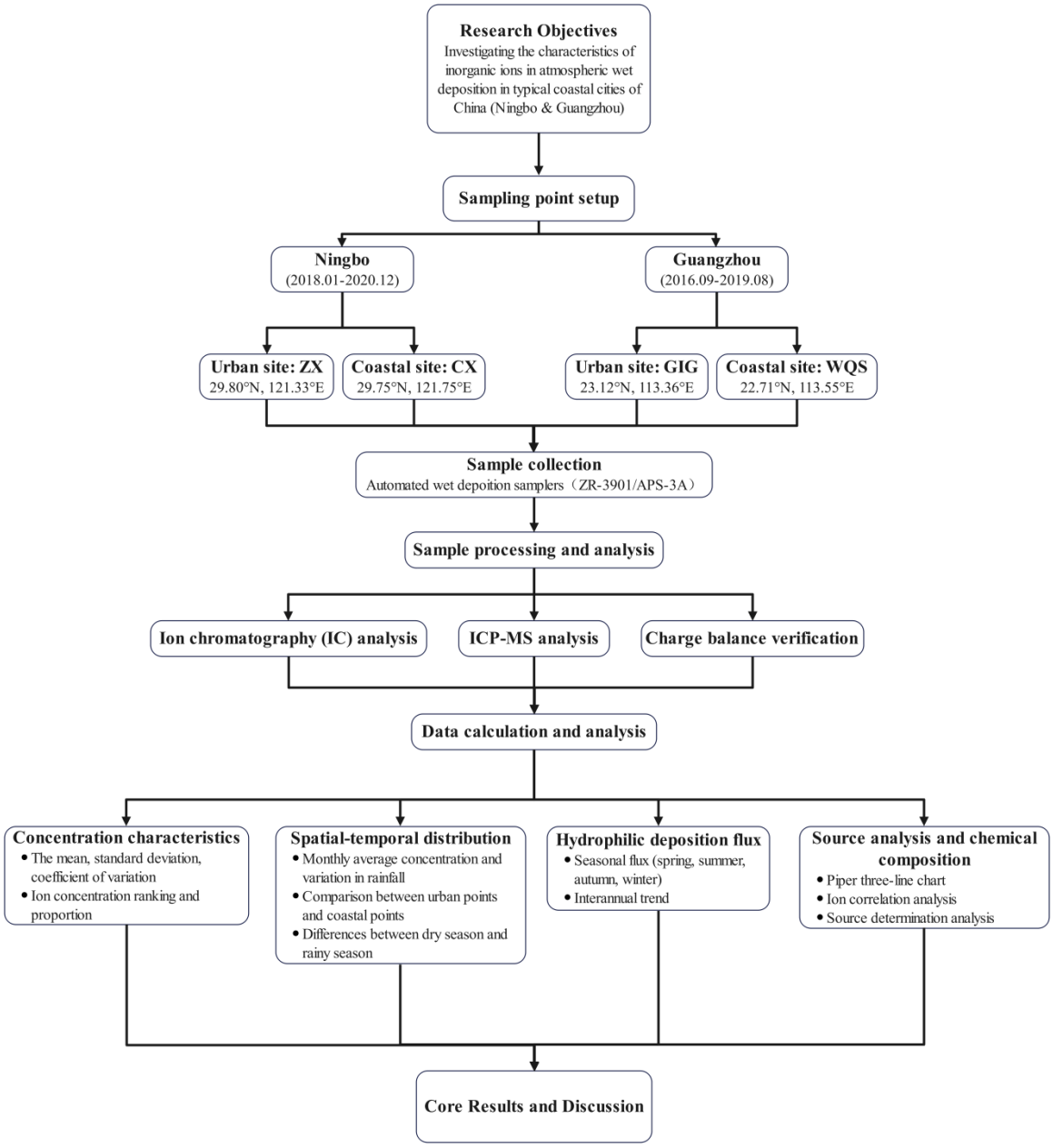


**Figure S1** Flow chart of the experimental design and analytical procedures.

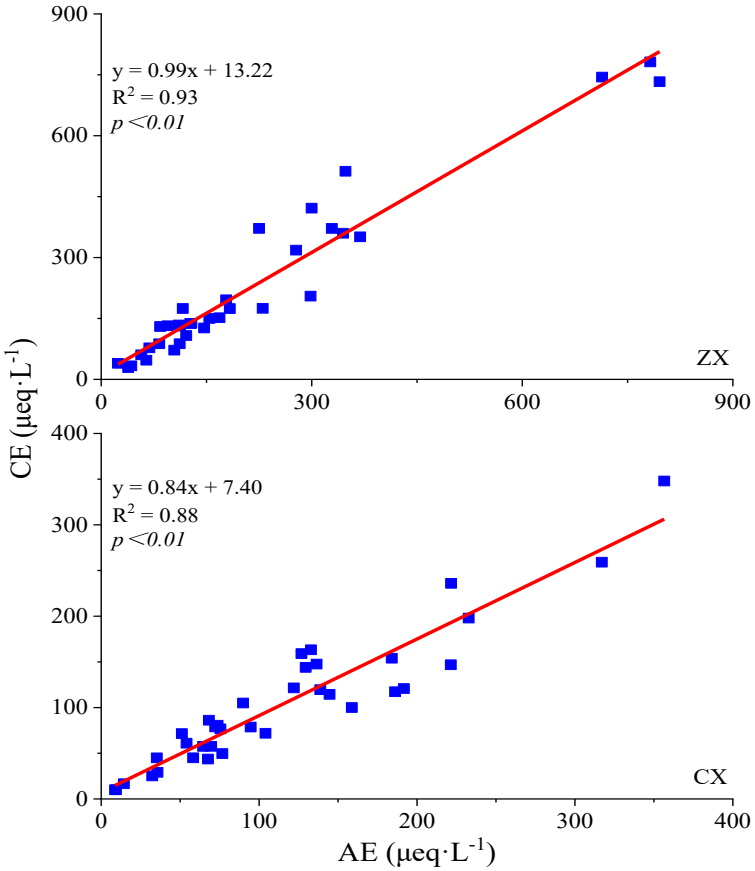


**Figure S2** Charge balance of ions at ZX and CX sites in Ningbo

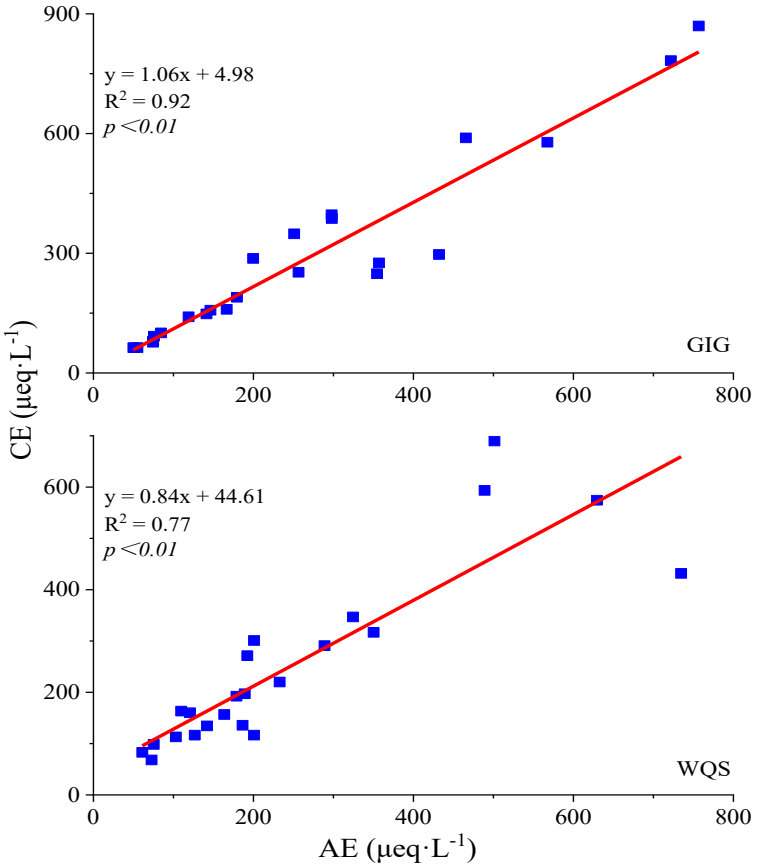


**Figure S3** Charge balance of ions at GIG and WQS sites in Guangzhou